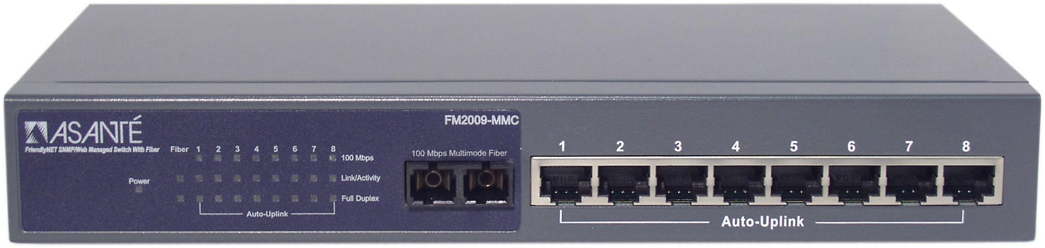


FriendlyNET® FM2008/2009
SNMP/Web Managed Switches

User's Manual

Quick Start Guide

Follow these steps to install the switch:

1. Open the box and check the contents. See Chapter 1 for a complete list of the items included with the switch.
2. Install the switch in an equipment or wall rack, or prepare it for desktop placement.
3. Connect the power supply.
4. Connect network devices to the switch.
5. Refer to Chapters 4 and 5 for configuration and management capabilities.

FriendlyNET FM2008/2009 SNMP/Web Managed Switches

User's Manual

Asanté Technologies, Inc.
821 Fox Lane
San Jose, CA 95131
USA

SALES

800-662-9686 Home/Office Solutions
800-303-9121 Enterprise Solutions
408-435-8388
sales@asante.com

TECHNICAL SUPPORT

801-566-8991 Worldwide
801-566-3787 FAX
www.asante.com
support@asante.com

Rev. A

Table of Contents

Quick Start Guide 2

1. Introduction 5
2. Hardware Description 9
3. Console Management 15
4. Web-Based Management 55
5. Technical Specifications 82
6. Troubleshooting 83

1. Introduction

Thank you for purchasing the FM2008/2009 SNMP/Web Managed Switch.

The FM2008/2009 switches are compact desktop-sized switches that are an ideal solution for the SOHO (Small Office or Home Office) network user. They provide full wire-speed, Fast Ethernet switching that allows a high-performance, low-cost connection. Each switch features store-and-forward switching and can auto-learn and store source addresses on an 8K-entry MAC address table.

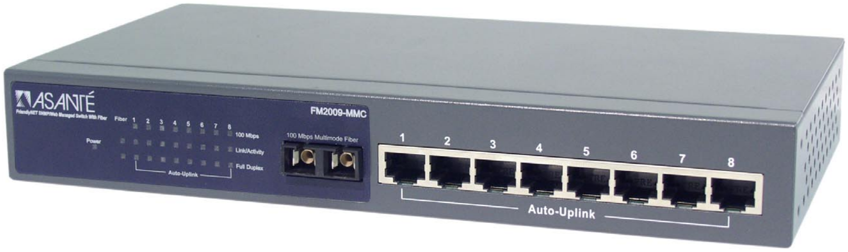


Figure 1-1. The FriendlyNET FM2009 Switch

The FM2008/2009 both provide 8 switched, auto-sensing 10/100 Mbps RJ-45 Ethernet ports. Each switch will automatically detect the speed of the device(s) connected to it, allowing the user to use both 10 and 100Mbps legacy devices. The 10Mbps bandwidth will accommodate 10Mbps workgroup hubs while simultaneously providing the 100Mbps bandwidth needed to accommodate multimedia applications. In addition, each RJ-45 port supports **Auto MDI/MDI-X** function.

The FM2009 switch also provides one 100Base-FX fiber port. Four types of fiber connectors are available: SC, MT-RJ, VF-45 (multi-mode), and SC (single-mode). The fiber port can be used to connect to a remote site up to 2 kilometers (multi-mode) or 15–60 kilometers (SC single-mode) away.

With its built-in **Web-based Management,** managing and configuring the switch is easy: From cabinet management to port-level control and monitoring, the user can visually configure and manage the network via a web browser. Just click your mouse instead of typing command strings. However, the switch can also be managed via telnet, console, or SNMP management.

Features

- Conforms to IEEE 802.3, 802.3u, and 802.3x Ethernet Standards
- 8x auto-sensing 10/100Mbps Ethernet RJ-45 ports
- Automatic MDI/MDI-X crossover for each 10BaseT/ 100BaseTX port
- FM2009 only: 1 fixed 100Mbps fiber port (SC/SC single mode/MT-RJ/VF-45 connector)
- Half-duplex mode for backpressure, and full-duplex for flow control
- Store-and-forward switching architecture for abnormal packet filtering
- Automatic address learning, address migration
- 8K-entry MAC address table
- 2Mbit memory buffer sharing
- Performs non-blocking full wire speed switching
- LED indicators for Power, 100Mbps, Link/Activity, Full duplex
- 10 inch desktop-sized design

Intelligent Management Features

- Web-based management
- SNMP network management
- Console and Telnet management
- IEEE 802.1q Port Base VLAN and Tag VLAN up to 256 static VLANs, or up to 4094 dynamic VLANs

- IEEE 802.1ad Port Trunking LACP supported
- IEEE 802.1D Spanning Tree
- MIB II (RFC1213) supported
- IP Multicast, IGMP Snooping
- Quality of Service (QoS)
- Port Mirror, Broadcast Filter, Static MAC Address, Port Security, MAC Filtering and GVRP supported

Package Contents

Unpack the contents of the switch and verify them against the following checklist:

- Switch
- Power Cord
- Rack Mount Kit
- Four Rubber Feet
- RS-232 Cable
- Set-up Guide
- User's Manual (this document) on CD-ROM

If any item is missing or damaged, please contact your local dealer immediately for service.

Management Methods

The switch series supports the following management methods:

- Console and Telnet Management
- Web-based Management
- SNMP Network Management

Console and Telnet Management

Console Management is done through the RS-232 Console Port. Managing the switch in this method requires a direct connection between the computer and the switch, while Telnet management is done over the network. Once the switch is on the network, use Telnet to log in and change the configuration.

Note: The default IP address of the switch is **192.168.0.1**. Both the default user name and the default password are **root**.

Web Based Management

The switch provides an embedded HTML web site residing in flash memory. It offers advanced management features and allows users to manage the switch from anywhere on the network through a standard browser such as Microsoft Internet Explorer.

SNMP Network Management

SNMP (Simple Network Management Protocol) provides a means to remotely manage network devices, and to monitor statistics, performance, and security.

2. Hardware Description

This section describes the hardware of the FM2008 and 2009. (The model shown is the FM2009. The FM2008 is identical, except that there is no fiber uplink port.)

Front Panel

The front panel of the switch consists of 8 auto-sensing 10/100Mbps Ethernet RJ-45 ports (automatic MDI/MDI-X), one 100Base-FX fiber port, and the LED indicators.

FM2009 Managed Switch

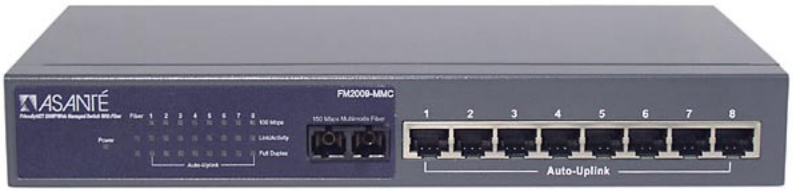


Figure 2-1. The front panel of the switch

Four types of fiber connectors are available (FM2009 only): SC, SC single-mode, MT-RJ, and VF-45.

FM2009 managed switch with SC Connector (multi-mode)

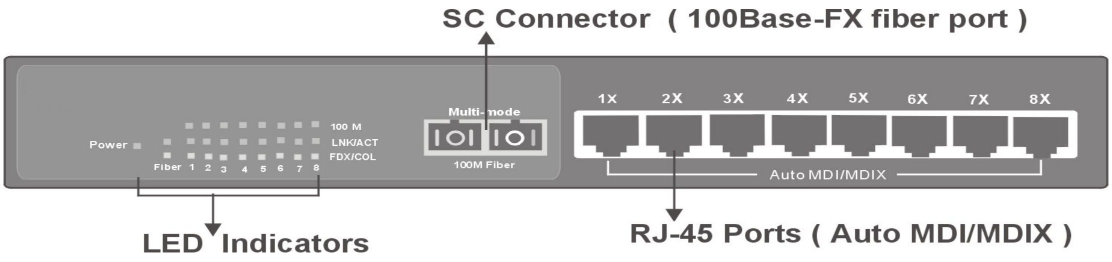


Figure 2-2. The front panel of the FM2009 with a SC connector

FM2009 managed switch with SC Connector (single-mode)

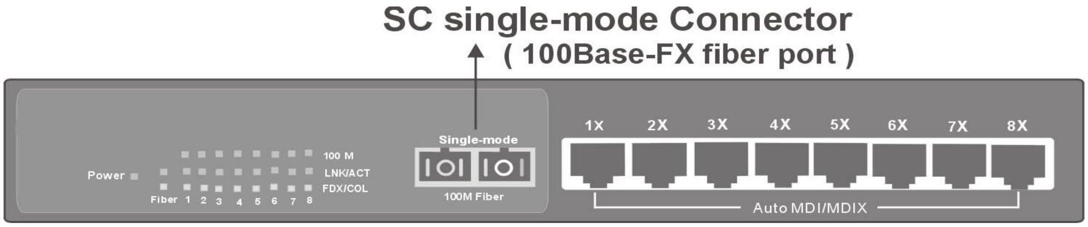


Figure 2-3. The front panel of the FM2009 with a SC (single mode) connector

FM2009 managed switch with VF-45 Connector

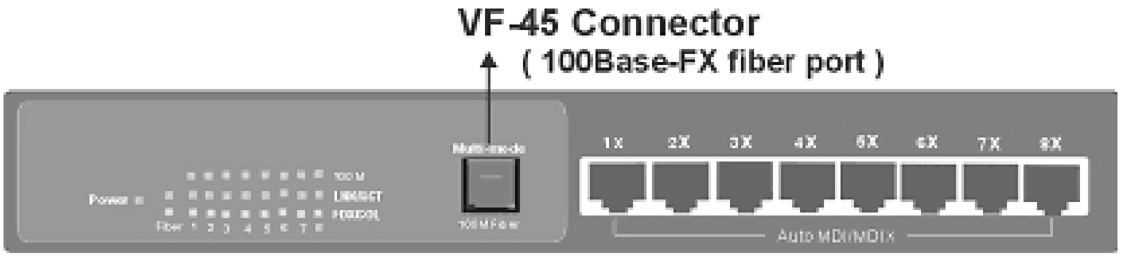


Figure 2-4. The front panel of the FM2009 with a VF45 connector

FM2009 managed switch with MT-RJ Connector

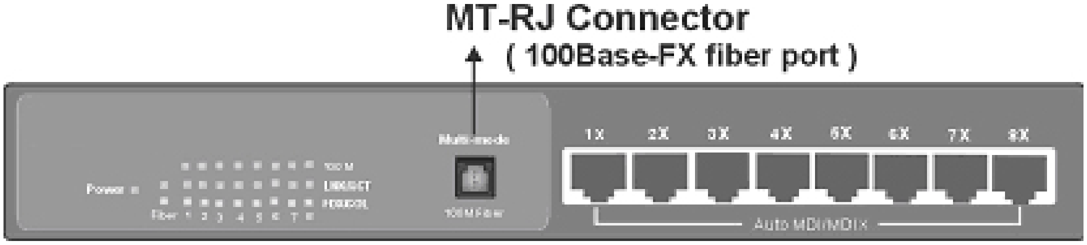


Figure 2-5. The front panel of the FM2009 with a MT-RJ connector

- **RJ-45 Ports (Auto MDI/MDI-X):** Eight 10/100Mbps ports; auto-sensing for 10Base-T or 100Base-TX connections.

  In general, **MDI** means connecting to another hub or switch while **MDI-X** means connecting to a workstation or PC. Therefore, **Auto MDI/MDI-X** means that the switch can connect to another switch or workstation without changing non-crossover or crossover cabling.

- **100Base-FX Fiber Port:** There are 4 types of fiber connectors available for the switch, as shown above. The distance for fiber cabling can be extended up to 2 kilometers. However, the distance for SC single-mode fiber port is 60 kilometers.

LED Indicators

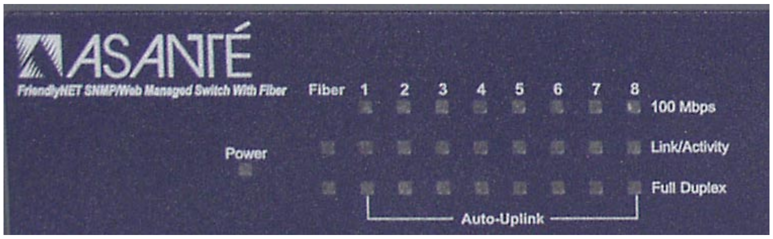


Figure 2-6. LED Indicators from the FM2009

The fiber port (FM2009) has two LED indicators (Link/Activity, Full Duplex), and each UTP port has three LED indicators (100Mbps, Link/Activity, Full Duplex).

The following table provides descriptions of the LEDs statuses and meanings. These LEDs provide a real-time indication of systematic operation status.

LED	Status	Color	Description
Power	On	Green	Power On
100Mbps	On	Green	The port is operating at 100Mbps
	Off		The port is operating at 10Mbps, or no device is attached
Link/ Activity	On	Green	A valid link has been established on the port
	Blinking	Green	The port is receiving or transmitting data
	Off		No device attached
Full Duplex	On	Yellow	The port is operating in full-duplex mode. This LED is always lit on the fiber port
	Blinking	Yellow	Packet collision is occurring on the port
	Off		Half-duplex mode or no device attached

Table 2-1. The description of LED Indicators

Rear Panel

The console port and 3-pronged power plug are located at the rear panel of the switch as shown in figure 2-7. The switch will work with AC in the ranges 100–240V AC, 50–60Hz.

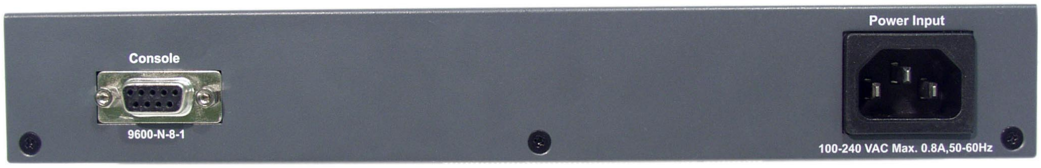


Figure 2-7. The rear panel of the switch

Console Port: Switch management can be done through the console port. It requires a direct connection between the switch and an end station (PC) via an RS-232 cable.

Desktop Installation

Set the switch on a sufficiently large flat space with a power outlet nearby. The surface should be clean, smooth, level, and sturdy.

Make sure there is enough clearance around the switch to allow attachment of cables, power cord and air circulation.

Attaching Rubber Feet

1. Make sure mounting surface on the bottom of the switch is grease and dust free.
2. Remove adhesive backing from the rubber feet (supplied).
3. Apply the rubber feet to each corner on the bottom of the switch. These footpads can prevent the switch from shock/vibration.

Installation Into an Equipment Rack

To mount the switch into an equipment rack:

1. Place the switch on a flat, stable surface.
2. Locate a rack-mounting bracket (supplied) and place it over the mounting holes on one side of the unit.
3. Use the screws (supplied) to secure the bracket (with a Phillips screwdriver).
4. Repeat the two previous steps on the other side of the unit.
5. Place the switch in the equipment rack.
6. Secure the switch by securing its mounting brackets onto the equipment rack.

Important! Make sure the unit is supported until all of the mounting screws for each bracket are secured to the equipment rack. Failure to do so could cause the unit to fall, which may result in personal injury or damage to the unit.

Equipment Rack Guidelines

- Size: 10.0 x 5.2 x 1.5 inches
- Ventilation: Ensure that the rack is installed in a room in which the temperature remains below 40° C (104° F). Be sure that no obstructions, such as other equipment or cables, block airflow to or from the vents
- Clearance: In addition to providing clearance for ventilation, ensure that adequate clearance for servicing the switch from the front exists

Power On

Connect the power cord to the power socket on the rear panel of the switch. The other side of power cord connects to the power outlet. The internal power supply in the switch works with AC in the voltage ranges 100-240VAC, frequency 50–60Hz.

Check the power indicator on the front panel to see if power is properly supplied.

3. Console Management

This chapter explains how to configure console management via a direct connection to the console port of the switch.

Console management involves the administration of the switch via a direct connection to the RS-232 console port. This port is a female DB-9 connector. From the main menu of the console program, user has access to manage the functions of the switch.

Connecting a Terminal or PC to the Console Port

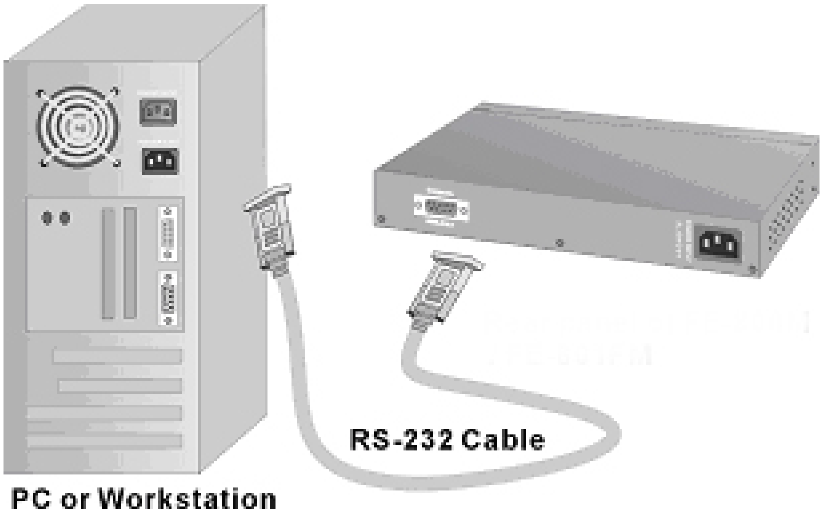
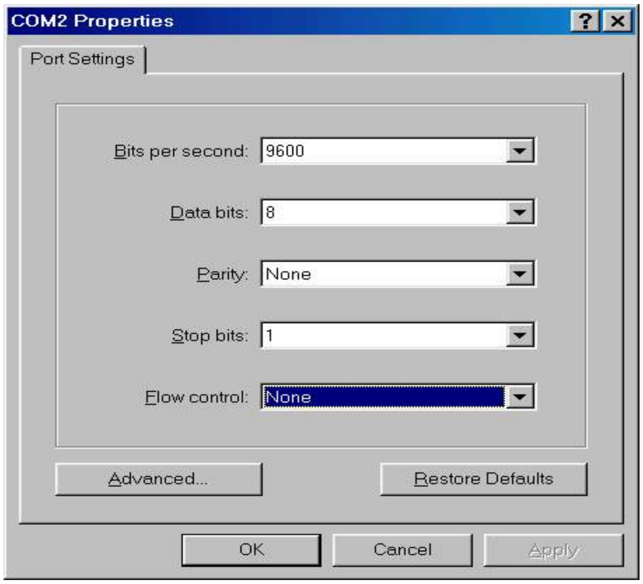


Figure 3-1. Connecting the switch to a terminal via an RS-232 cable

Use the supplied RS-232 cable to connect a terminal or PC to the console port. The terminal or PC to be connected must support the terminal emulation program.

After the connection between the switch and the PC is finished, turn on the PC and run a **terminal emulation program** such as **Hyper Terminal** to match the following default characteristics of the console port:

Baud Rate: 9600 bps
Data Bits: 8
Parity: none
Stop Bit: 1
Control flow: None



COM2 Properties

Port Settings

Bits per second: 9600

Data bits: 8

Parity: None

Stop bits: 1

Flow control: None

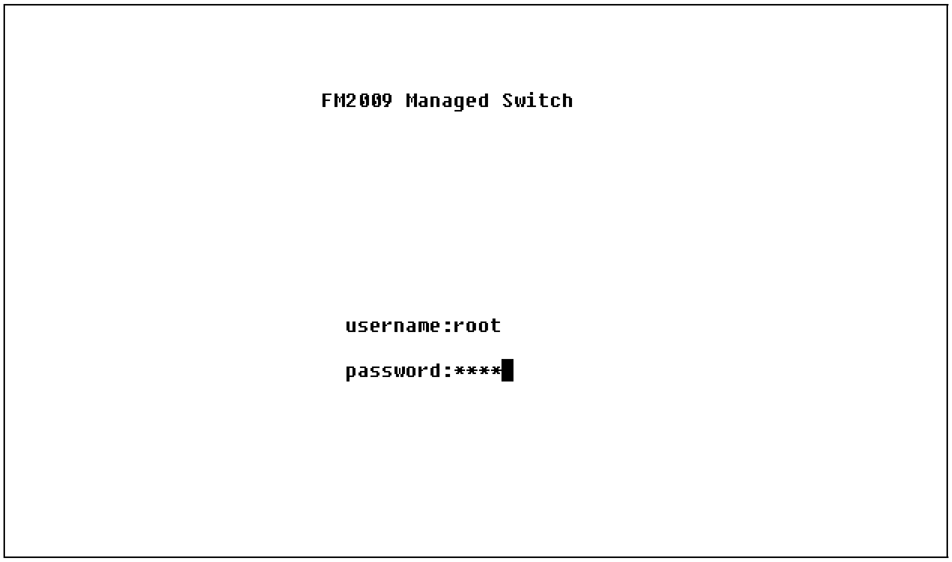
Figure 3-2. Communication parameters settings

After entering the parameter settings, press the **Enter** key and the Login screen for console management appears.

Console – Menu

The switch provides a serial interface to manage and monitor the switch. The user can follow the Console Port Information provided by the web interface to use Windows HyperTerminal program to connect to the switch.

Type the user name and password to login. The default user name is **root** and the default password is also **root**.

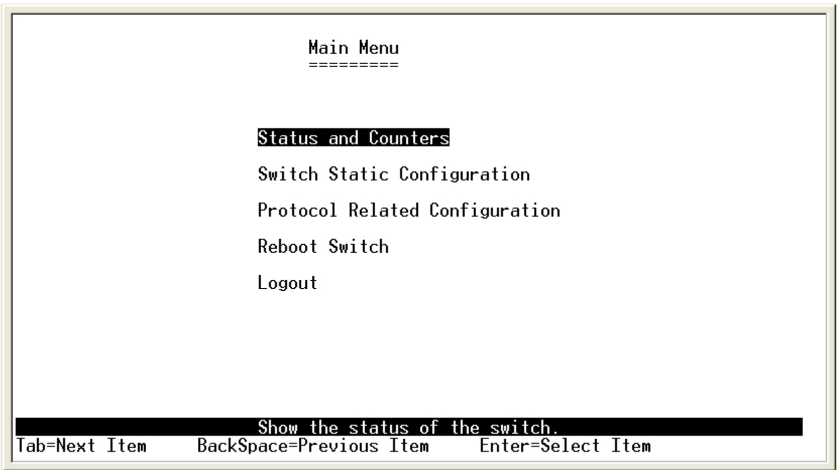


```
FM2009 Managed Switch

username:root
password:****
```

3.1 Main Menu

To move through each screen's menu, use the **Tab** key or **Backspace** bar to highlight an option, press **Enter** to select an option, and press the **Spacebar** to toggle between configuration options.

The main menu contains the following options:



```
Main Menu
=========

Status and Counters
Switch Static Configuration
Protocol Related Configuration
Reboot Switch
Logout

Show the status of the switch.
Tab=Next Item     BackSpace=Previous Item     Enter=Select Item
```

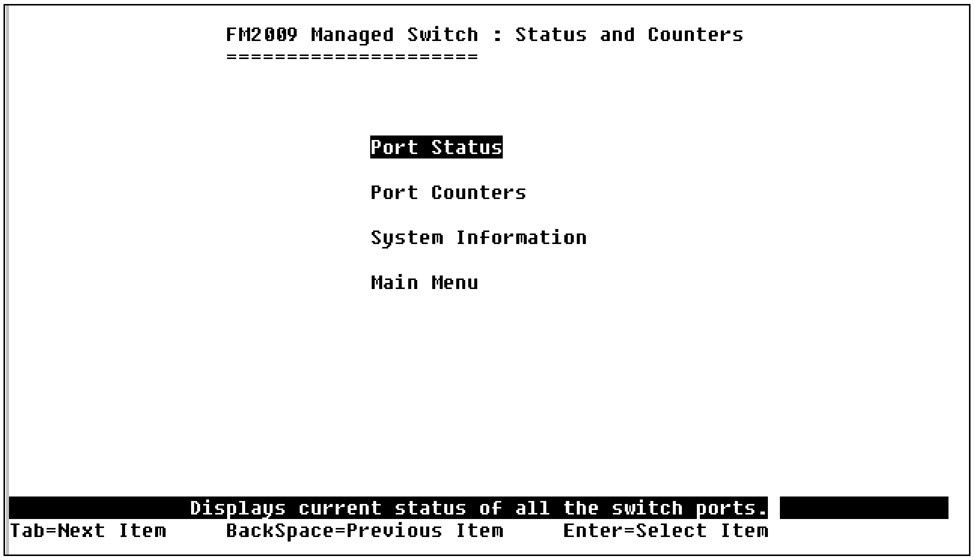
- **Status and Counters:** Displays the status of the switch
- **Switch Static Configuration:** Allows the user to configure the switch
- **Protocol Related Configuration:** Allows the user to configure supported protocols

- **Reboot Switch:** Restarts the system or resets switch to default configuration
- **Logout:** Exits the menu line program

3.2 Status and Counters

From the main menu, select *Status and Counters* to configure the following:

- Port Status
- Port Counters
- System Information



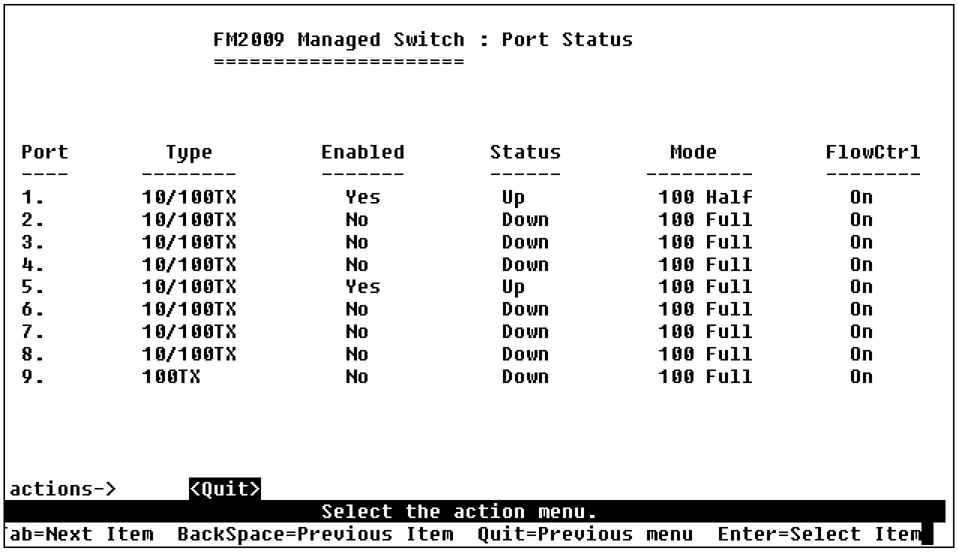
```
                 FM2009 Managed Switch : Status and Counters
                 =====================


                             Port Status

                             Port Counters

                             System Information

                             Main Menu









              Displays current status of all the switch ports.
Tab=Next Item     BackSpace=Previous Item     Enter=Select Item
```

3.2.1 Port Status

This page displays the current status of each port.

- **Type:** Displays the port speed
- **Enabled:** Displays whether each port is enabled (“Yes”) or disabled (“No”)
- **Status:** Displays each port’s link status; “Down” means there is no link detected, and “Up” means there is a valid link detected

- **Mode:** Displays each port’s speed and duplex state
- **FlowCtrl:** Displays the flow control status of each port; “On” indicates that flow control is enabled and “Off” indicates that it is disabled



```
                 FM2009 Managed Switch : Port Status
                 =====================


 Port      Type         Enabled      Status      Mode        FlowCtrl
 ----      --------     -------      ------      ---------   --------
 1.        10/100TX       Yes         Up          100 Half     On
 2.        10/100TX       No          Down        100 Full     On
 3.        10/100TX       No          Down        100 Full     On
 4.        10/100TX       No          Down        100 Full     On
 5.        10/100TX       Yes         Up          100 Full     On
 6.        10/100TX       No          Down        100 Full     On
 7.        10/100TX       No          Down        100 Full     On
 8.        10/100TX       No          Down        100 Full     On
 9.        100TX          No          Down        100 Full     On



actions->       <Quit>
                          Select the action menu.
ab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

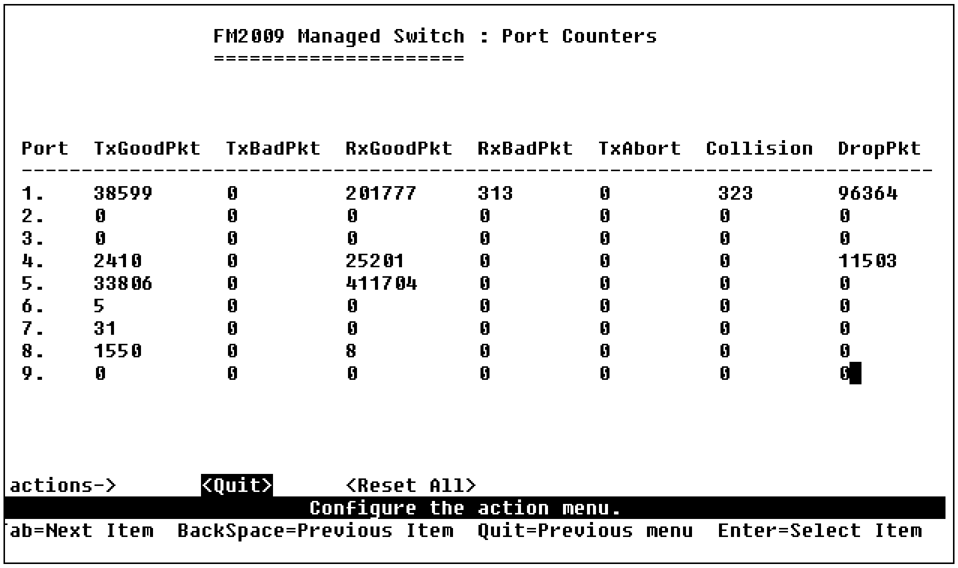
Actions->

Press the **Tab** or **Backspace** keys to choose action menu, and press the **Enter** key to select an option.

<Quit>: Exits the port status page, and returns to the previous menu
<Previous Page>: Displays the previous page
<Next page>: Displays the next page

3.2.2 Port Counters

This page displays the current counter statistics for each port.



```
                 FM2009 Managed Switch : Port Counters
                 =====================


 Port  TxGoodPkt  TxBadPkt  RxGoodPkt  RxBadPkt  TxAbort  Collision  DropPkt
 ---------------------------------------------------------------------------
 1.    38599      0         201777     313       0        323        96364
 2.    0          0         0          0         0        0          0
 3.    0          0         0          0         0        0          0
 4.    2410       0         25201      0         0        0          11503
 5.    33806      0         411704     0         0        0          0
 6.    5          0         0          0         0        0          0
 7.    31         0         0          0         0        0          0
 8.    1550       0         8          0         0        0          0
 9.    0          0         0          0         0        0          0



actions->       <Quit>      <Reset All>
                         Configure the action menu.
ab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Actions->
Press the **Tab** or **Backspace** keys to choose action menu, and press the **Enter** key to select an option.

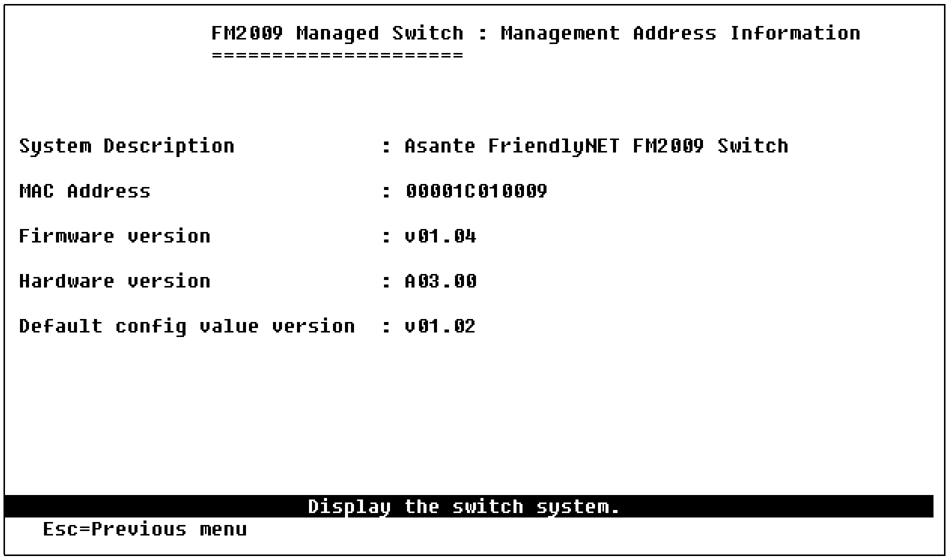
<Quit>: Exits the port status page, and returns to the previous menu
<Reset All>: Sets all counters to **0**
<Previous Page>: Displays the previous page
<Next page>: Displays the next page

3.2.3 System Information

This page displays the system information. Press the **Esc** key to return to the main menu.

- **System Description:** Displays the name of the device
- **MAC Address:** Displays the unit's MAC Address (the unique hardware address assigned by the manufacturer)
- **Firmware Version:** Displays the firmware version

- **Hardware Version:** Displays the hardware version
- **Default config value version:** Displays the EEPROM version

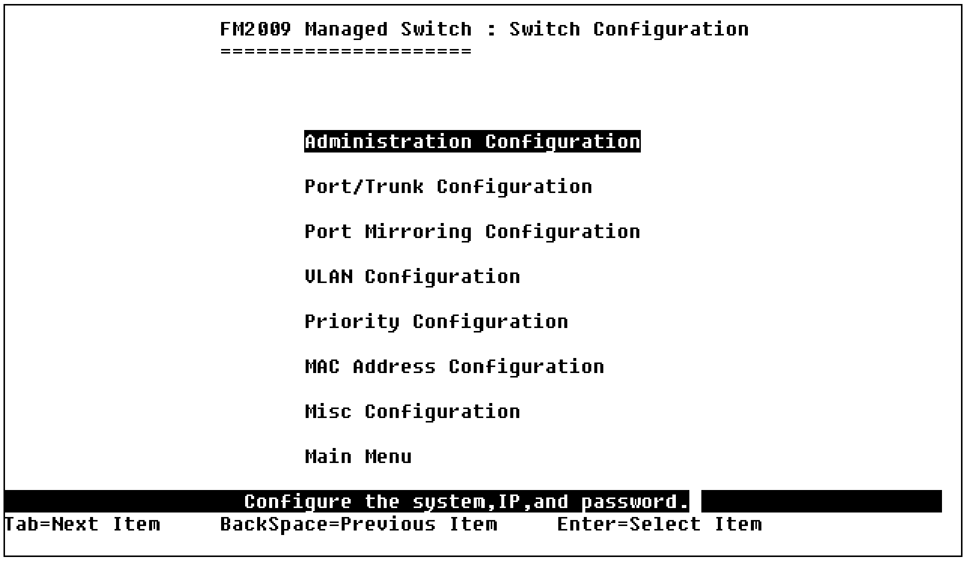


```
                FM2009 Managed Switch : Management Address Information
                =====================


System Description            : Asante FriendlyNET FM2009 Switch

MAC Address                   : 00001C010009

Firmware version              : v01.04

Hardware version              : A03.00

Default config value version  : v01.02






                          Display the switch system.
  Esc=Previous menu
```

3.3 Switch Static Configuration

From the main menu, select *Switch Static Configuration* to configure the following options:

- Administration Configuration
- Port/Trunk Configuration
- Port Mirroring Configuration
- VLAN Configuration
- Priority Configuration
- MAC Address Configuration
- Misc. Configuration

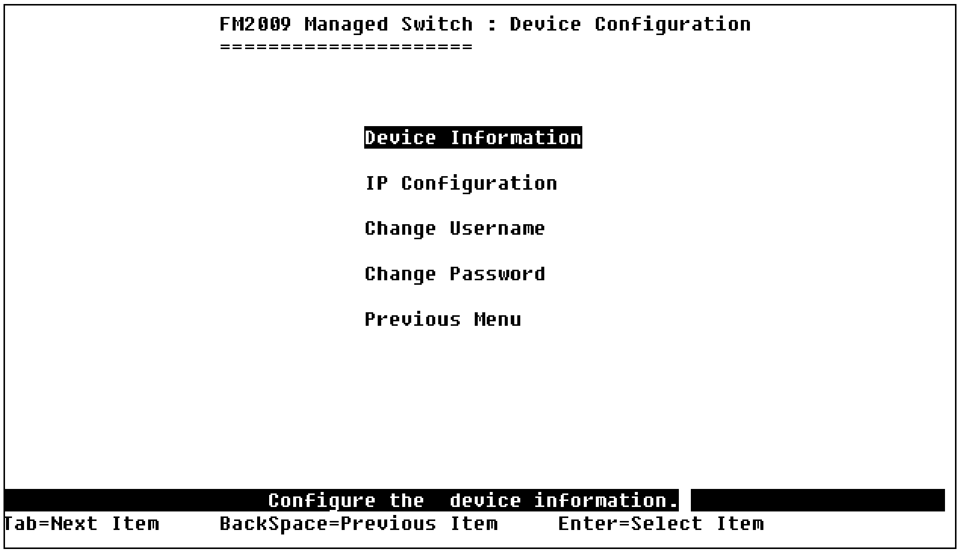


```
                 FM2009 Managed Switch : Switch Configuration
                 =====================


                        Administration Configuration

                        Port/Trunk Configuration

                        Port Mirroring Configuration

                        VLAN Configuration

                        Priority Configuration

                        MAC Address Configuration

                        Misc Configuration

                        Main Menu

                   Configure the system,IP,and password.
Tab=Next Item     BackSpace=Previous Item     Enter=Select Item
```

3.3.1 Administration Configuration

From the *Switch Static Configuration* menu, select *Administration Configuration* to configure the following options:

- Device Configuration
- IP Configuration
- Change Username
- Change Password



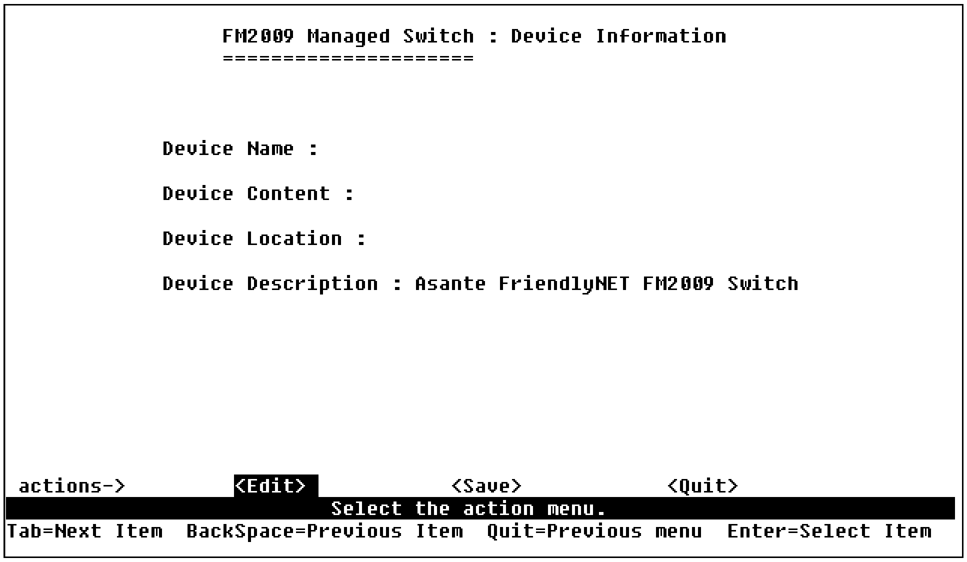
```
                 FM2009 Managed Switch : Device Configuration
                 =====================


                             Device Information

                             IP Configuration

                             Change Username

                             Change Password

                             Previous Menu




                     Configure the  device information.
Tab=Next Item     BackSpace=Previous Item     Enter=Select Item
```

3.3.1.1 Device Information

This page displays the device information. Use the action menu line to change information.

Actions->

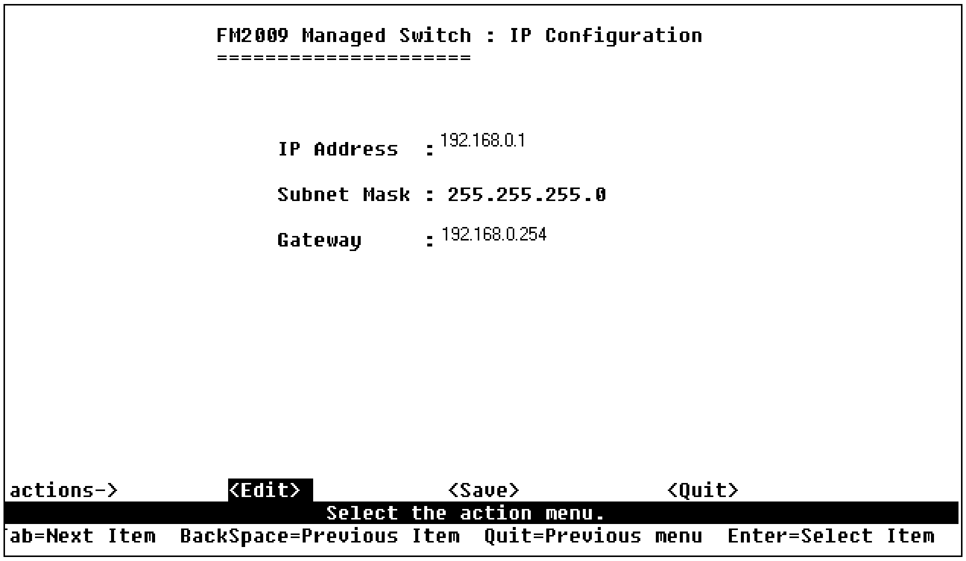
<Edit>: Allows the configuration of all items. When finished, press **Esc** to return to the action menu line.
<Save>: Saves the new configuration.
<Quit>: Exits the *Device Information* page and returns to the previous menu.



```
                 FM2009 Managed Switch : Device Information
                 ====================


            Device Name :

            Device Content :

            Device Location :

            Device Description : Asante FriendlyNET FM2009 Switch






 actions->          <Edit>           <Save>           <Quit>
                           Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

3.3.1.2 IP Configuration

From this page, the user can change the IP address from the default IP address. Use the action menu line to enter the new IP setting.



```
                FM2009 Managed Switch : IP Configuration
                ====================


                     IP Address  : 192.168.0.1

                     Subnet Mask : 255.255.255.0

                     Gateway     : 192.168.0.254











actions->          <Edit>          <Save>          <Quit>
                         Select the action menu.
ab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

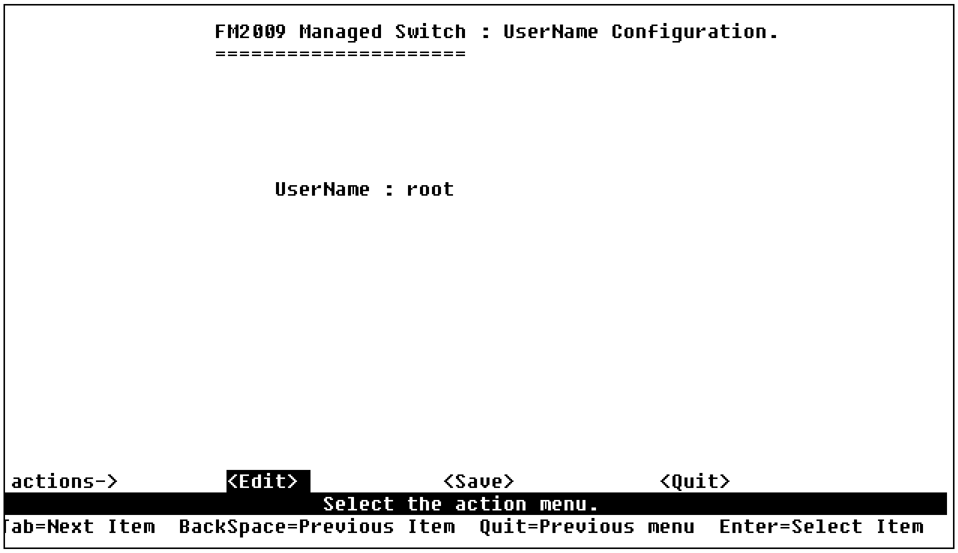
Actions->

<Edit>: Configures all items. When finished, press **Esc** to go back to the action menu line.
<Save>: Saves the new configuration.
<Quit>: Exits the *IP Configuration* page and returns to the previous menu.

Note: You need to save and restart the computer after finishing IP configuration.

3.3.1.3 Change Username

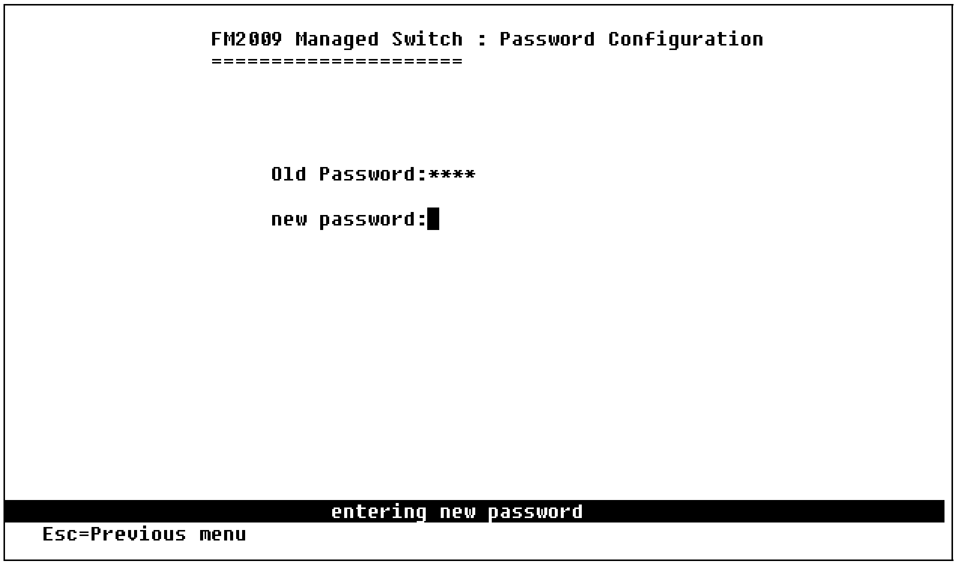
From this page the user can change the web management user name.



```
                 FM2009 Managed Switch : UserName Configuration.
                 ====================



                      UserName : root









actions->         <Edit>           <Save>           <Quit>
                         Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

3.3.1.4 Change Password

From this page the user can change the web management user password.

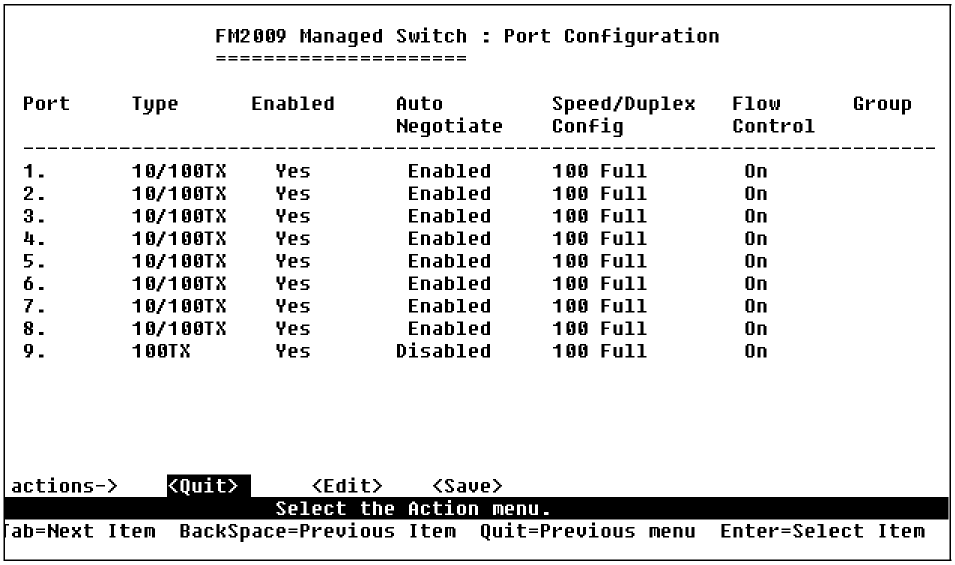


```
                 FM2009 Managed Switch : Password Configuration
                 ====================


                      Old Password:****

                      new password:█









                         entering new password
   Esc=Previous menu
```

3.3.2 Port/Trunk Configuration

From the *Switch Static Configuration* page, select *Port/Trunk Configuration* to change each port’s status and to configure trunking groups. Press the **Space** key to toggle between configuration options.

- **Enabled:** The user can disable or enable each port
- **Auto Negotiate:** The user can enable or disable auto negotiation for each port
- **Speed/Duplex Config:** The user can set 100Mbps or 10Mbps speed on ports 1-8 (port 9 is 100Mbps only), and set full-duplex or half-duplex mode
- **Flow Control:** The user can enable or disable flow control
- **Group:** The user can set trunk groups for ports 1-8. There can be up to four trunk groups



```
                 FM2009 Managed Switch : Port Configuration
                 =====================

 Port     Type      Enabled     Auto         Speed/Duplex   Flow      Group
                                Negotiate    Config         Control
 ----------------------------------------------------------------------------
 1.       10/100TX    Yes        Enabled     100 Full        On
 2.       10/100TX    Yes        Enabled     100 Full        On
 3.       10/100TX    Yes        Enabled     100 Full        On
 4.       10/100TX    Yes        Enabled     100 Full        On
 5.       10/100TX    Yes        Enabled     100 Full        On
 6.       10/100TX    Yes        Enabled     100 Full        On
 7.       10/100TX    Yes        Enabled     100 Full        On
 8.       10/100TX    Yes        Enabled     100 Full        On
 9.       100TX       Yes       Disabled     100 Full        On




actions->     <Quit>      <Edit>    <Save>
                      Select the Action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Actions->

<Quit>: Exits the port configuration page and returns to the previous menu.

<Edit>: Configures all items. When finished, press **Esc** to go back to the action menu line.

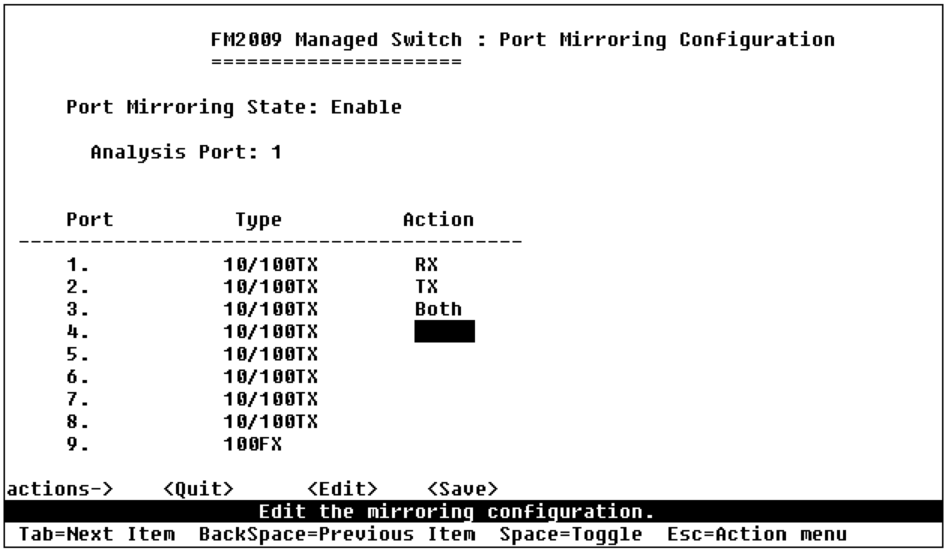
<Save>: Saves the new configurations.

<Previous Page>: Returns to the previous page.
<Next page>: Goes to the next page.

3.3.3 Port Mirroring Configuration

From the *Switch Static Configuration* page, select *Port Mirroring Configuration*. Port mirroring is a method for monitoring traffic in switched networks. Traffic through all the ports can be monitored by one specific port. Press the **Space** key to toggle between the configuration options:

- **Port mirroring state:** Use the space bar to toggle between "Disabled" and "Enabled"
- **Analysis Port:** Select which port will act as a "sniffer" port to monitor port traffic.
- **Action:** Select the ports to monitor. All monitored port traffic will be copied to the "sniffer" port. *You can select a maximum of 9 monitored ports in the switch.* Under the **Action** option, you may choose whether you want to monitor RX frames only or TX frames only, or both.



```
                 FM2009 Managed Switch : Port Mirroring Configuration
                 =====================

    Port Mirroring State: Enable

      Analysis Port: 1

    Port          Type          Action
-------------------------------------------
    1.           10/100TX        RX
    2.           10/100TX        TX
    3.           10/100TX        Both
    4.           10/100TX
    5.           10/100TX
    6.           10/100TX
    7.           10/100TX
    8.           10/100TX
    9.           100FX

actions->    <Quit>      <Edit>    <Save>
                     Edit the mirroring configuration.
 Tab=Next Item  BackSpace=Previous Item  Space=Toggle  Esc=Action menu
```

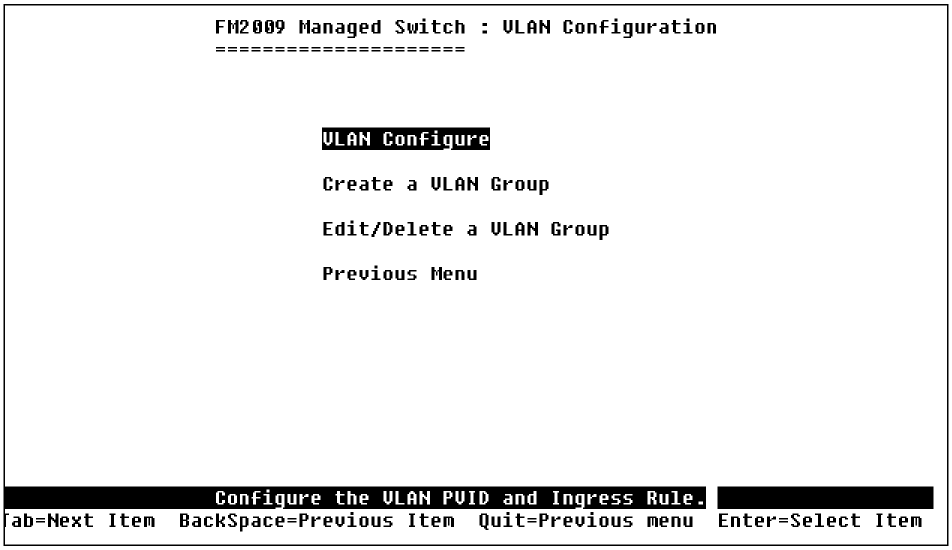
Actions->
<Quit>: Exits the port monitoring configuration page and returns to the previous menu.

<Edit>: Configures all items. When finished, press **Esc** to go back to the action menu line.
<Save>: Saves the new configurations.
<Previous Page>: Returns to the previous page.
<Next page>: Goes to the next page.

3.3.4 VLAN Configuration

From the *Switch Static Configuration* page, select the *VLAN Configuration* option to configure the following:

- VLAN Configure
- Create a VLAN Group
- Edit/Delete a VLAN Group



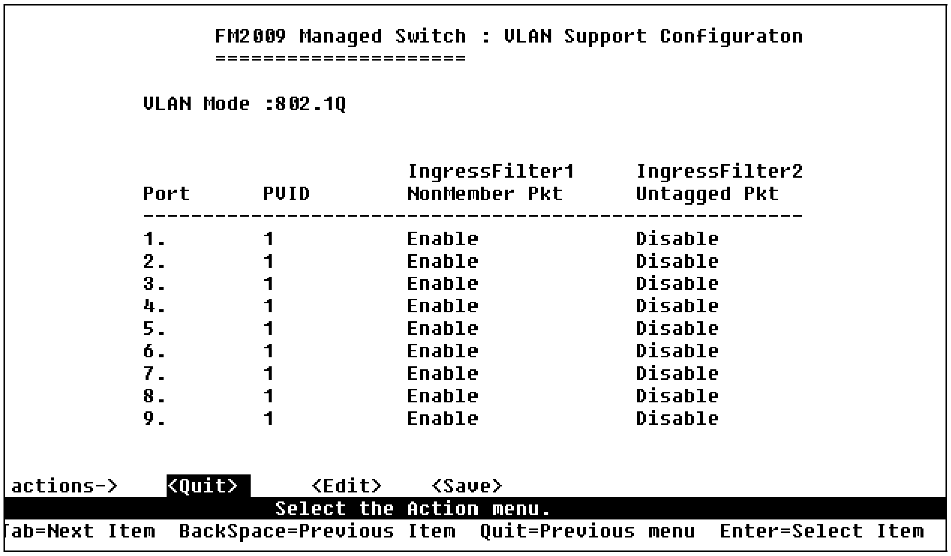
```
                 FM2009 Managed Switch : VLAN Configuration
                 =====================


                          VLAN Configure

                          Create a VLAN Group

                          Edit/Delete a VLAN Group

                          Previous Menu








                 Configure the VLAN PVID and Ingress Rule.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

3.3.4.1 VLAN Configure

Use the console connection to enable VLANs on the switch. Select *VLAN Configure* and *Edit*, then use the space bar to toggle between VLAN modes: *Disabled*, *Port-Based*, *802.1Q*, and *802.1QwithGVRP*. When using 802.1Q VLANs, enter the following values:

- **PVID (Port VID):** Set the port VLAN ID that will be assigned to untagged traffic on a given port. This feature is useful for accommodating devices that you want to participate in the VLAN but don't support tagging. Only one untagged VLAN is allowed per port
- **Ingress Filter 1:** Matches Ingress Filtering Rule 1. If enabled, drops any frame received by the port whose tag doesn't match the port's configured VID. Press **Spacebar** to toggle between Enable and Disable
- **Ingress Filter 2:** Matches Ingress Filtering Rule 2. If enabled, drops any frame without a VLAN tag. Press **Spacebar** to toggle between Enable and Disable

Important! Enabling either of these filters may disrupt communication through the switch. Please double-check your settings before saving the VLAN settings.



```
                 FM2009 Managed Switch : VLAN Support Configuraton
                 ====================

           VLAN Mode :802.1Q


                                   IngressFilter1     IngressFilter2
           Port      PVID          NonMember Pkt      Untagged Pkt
           -------------------------------------------------------
           1.        1             Enable             Disable
           2.        1             Enable             Disable
           3.        1             Enable             Disable
           4.        1             Enable             Disable
           5.        1             Enable             Disable
           6.        1             Enable             Disable
           7.        1             Enable             Disable
           8.        1             Enable             Disable
           9.        1             Enable             Disable


actions->     <Quit>      <Edit>    <Save>
                      Select the Action menu.
ab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

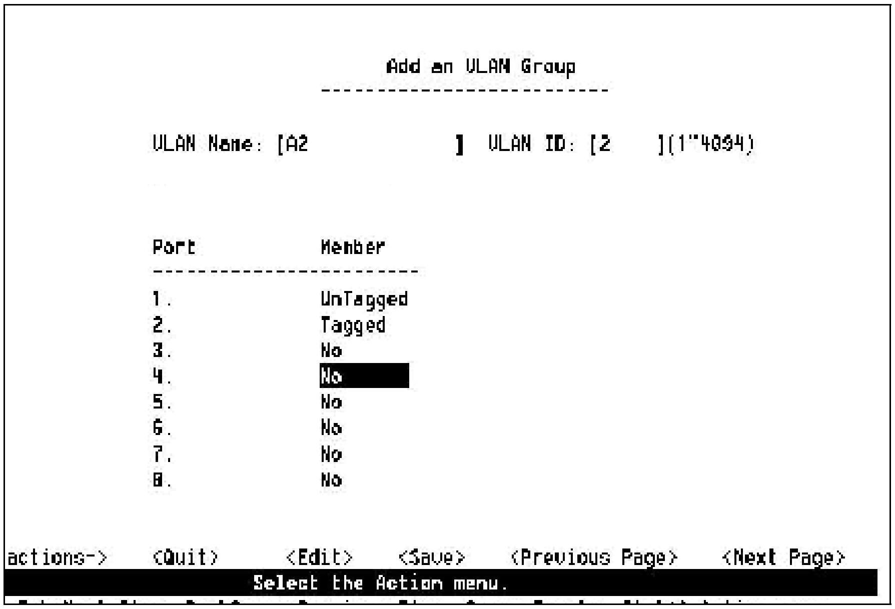
3.3.4.2 Create a VLAN Group

Create a VLAN and add tagged/untagged member ports to it.

- **VLAN Name:** Enter a name for the new VLAN
- **VLAN ID:** Enter a VID (between 2~4094). The default is 1
- **Protocol VLAN:** Press the **Space** key to choose the protocol type

- **Member:** Press the **Space** key to toggle each port's VLAN membership. There are three options:

  UnTagged: the member port is untagged port
  Tagged: the member port is tagged port
  No: the port is not a member of the VLAN group



```
                              Add an VLAN Group
                          -------------------------

       VLAN Name: [A2              ]  VLAN ID: [2    ](1~4094)


       Port           Member
       ------------------------
       1.             UnTagged
       2.             Tagged
       3.             No
       4.             No
       5.             No
       6.             No
       7.             No
       8.             No


actions->     <Quit>     <Edit>    <Save>    <Previous Page>    <Next Page>
                        Select the Action menu.
```

Actions->

<Quit>: Exits this page and returns to the previous menu.
<Edit>: Configures all items. When finished, press **Esc** to go back to the action menu line.
<Save>: Saves the new configurations.
<Previous Page>: Returns to the previous page.
<Next page>: Goes to the next page.

3.3.4.3 Edit / Delete a VLAN Group

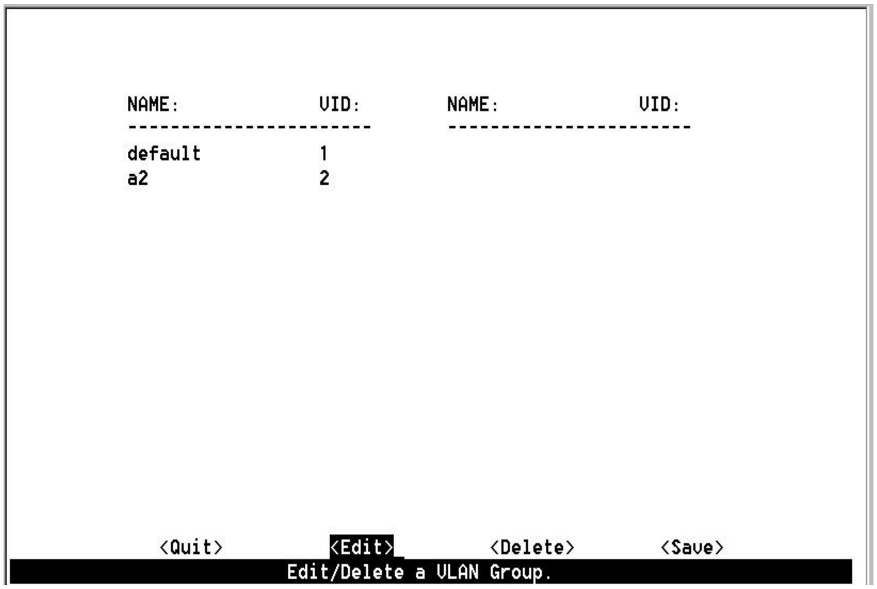
Access this page to edit or delete a VLAN group.

1. Select **<Edit>** or **<Delete>**.
2. Choose the VLAN group that you want to edit or delete and

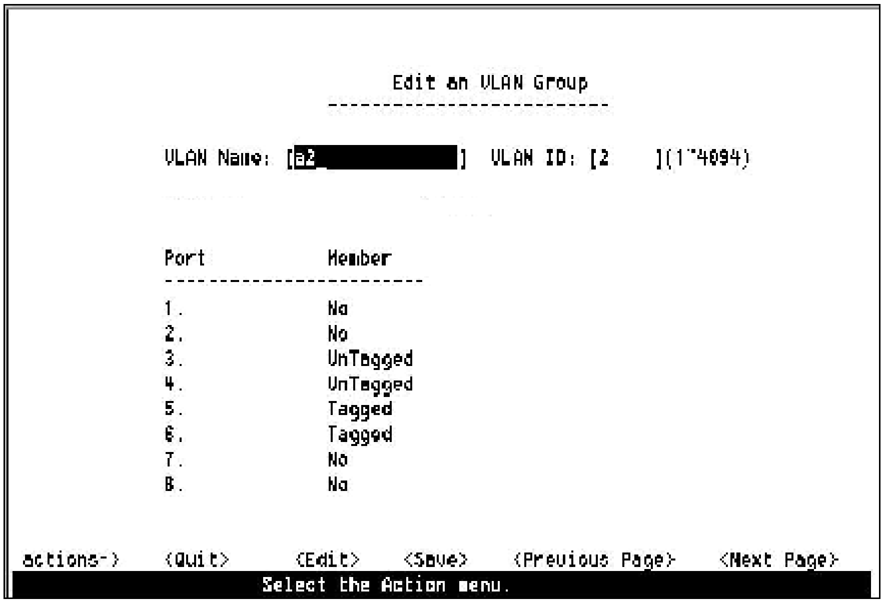
then press **Enter**.

3. Modify the options as desired, or add or remove member ports as desired.
4. After completing the desired changes to the VLAN, press **<Save>** to save the new configuration.

Note: The default VLAN cannot be deleted, nor can the VLAN Name or VLAN ID be modified.



```
NAME:               VID:        NAME:               VID:
-----------------------         -----------------------
default             1
a2                  2




      <Quit>           <Edit>_         <Delete>        <Save>
                       Edit/Delete a VLAN Group.
```

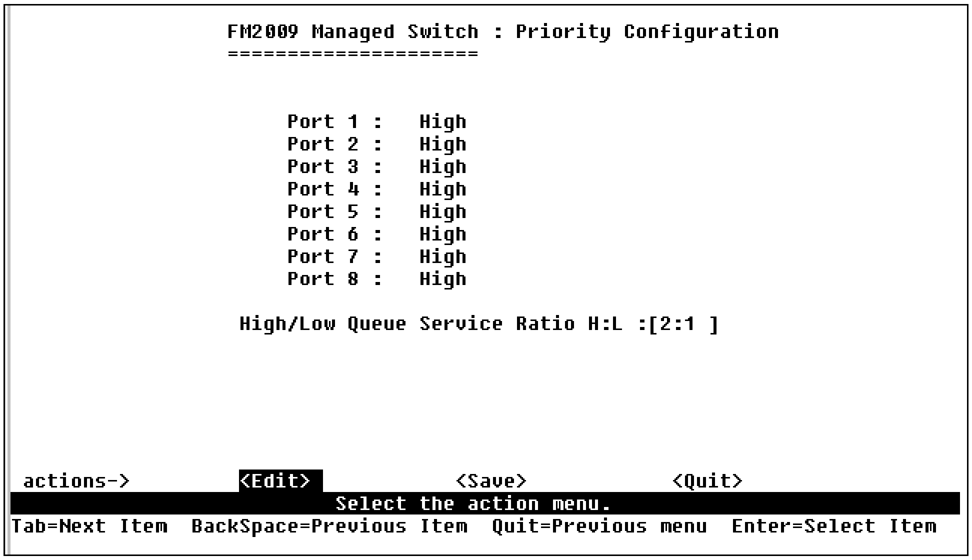


```
                          Edit an VLAN Group
                     ---------------------------

       VLAN Name: [a2_            ]  VLAN ID: [2    ](1~4094)


       Port            Member
       -------------------------
       1.              No
       2.              No
       3.              UnTagged
       4.              UnTagged
       5.              Tagged
       6.              Tagged
       7.              No
       8.              No

actions->   <Quit>     <Edit>    <Save>    <Previous Page>    <Next Page>
                     Select the Action menu.
```

3.3.5 Priority Configuration

There are 7 priority levels that map traffic to two queues. The High/Low Queue Service Ratio (H:L) allows the user to select the ratio of high priority packets to low priority packets processed by the switch.

First In First Out: The packets are sent out in the order they were received.
High to Low: High priority packets are sent before low priority packets.
Ratio: The user may select the precedence given to packets in the switch's high-priority queue. These options represent the number of high priority packets sent before one or more low priority packets are sent. For example, a ratio of 5:2 means that the switch sends 5 high priority packets before sending 2 low priority packets.



```
                 FM2009 Managed Switch : Priority Configuration
                 =====================


                      Port 1 :   High
                      Port 2 :   High
                      Port 3 :   High
                      Port 4 :   High
                      Port 5 :   High
                      Port 6 :   High
                      Port 7 :   High
                      Port 8 :   High

                  High/Low Queue Service Ratio H:L :[2:1 ]






 actions->         <Edit>          <Save>          <Quit>
                           Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Actions->

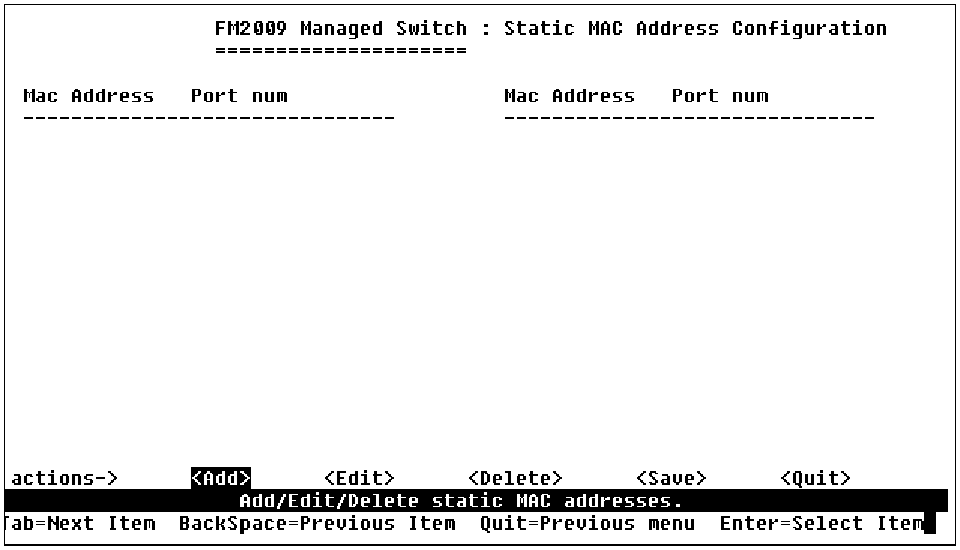
<Edit>: Configure all items. When finished, press **Esc** to go back to the action menu line.
<Save>: Saves the new configurations.
<Quit>: Exits this page and returns to the previous menu.

3.3.6 MAC Address Configuration

3.3.6.1 Static MAC Address

When you add a static MAC address, it remains in the switch's address table, regardless of whether the device is physically connected to the switch. This saves the switch from having to re-learn a device's MAC address when a device is reconnected to the network.

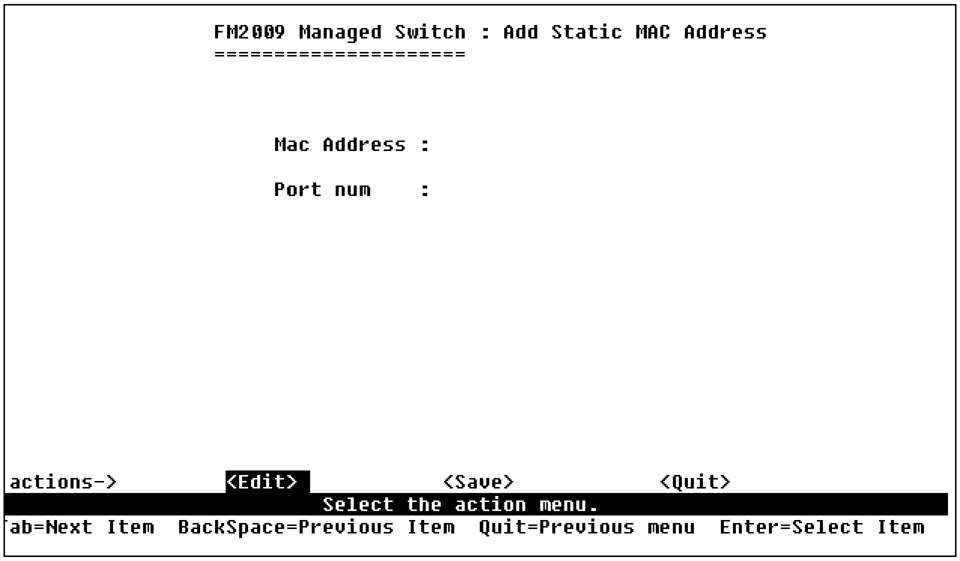
In this page user can **add**, **modify** or **delete** a static MAC address.



```
                FM2009 Managed Switch : Static MAC Address Configuration
                ====================

 Mac Address   Port num                    Mac Address   Port num
 ------------------------------            ------------------------------













actions->      <Add>     <Edit>     <Delete>     <Save>     <Quit>
                  Add/Edit/Delete static MAC addresses.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Add static MAC address

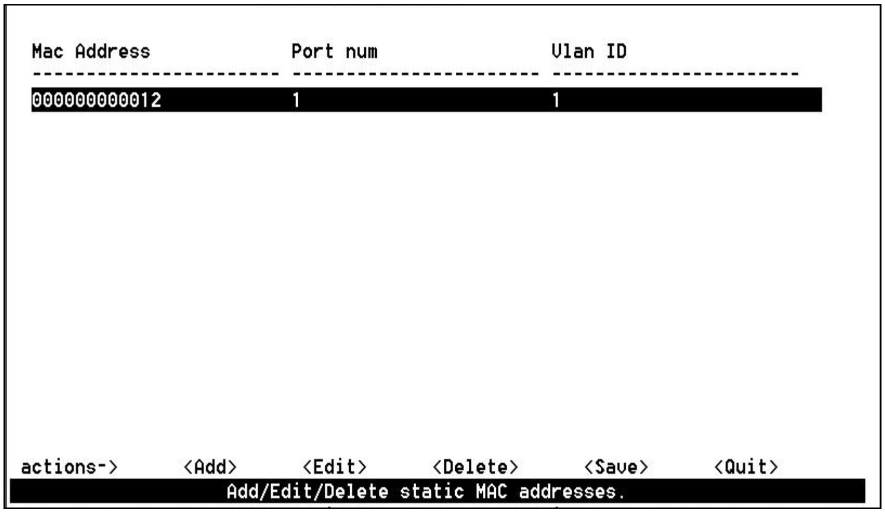
1. Press **<Add> --> <Edit>** key to add a static MAC address.
2. Enter the MAC address of a device from which the port should permanently forward traffic regardless of the device's network activity. Enter the address without separators (e.g. 000094abcdef)
3. In the *Port num* item, enter the port number.
4. If tag-based (802.1Q) VLANs are set up on the switch, static addresses are associated with individual VLANs. Type the VLAN ID number associated with the device's MAC address.
5. Press **Esc** to go back to the action menu line, and then select **<Save>** to save the new configuration.



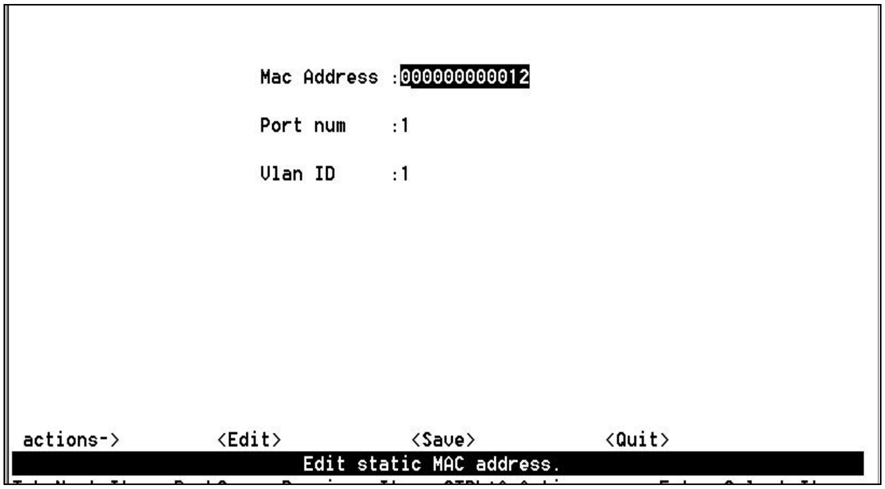
```
                  FM2009 Managed Switch : Add Static MAC Address
                  =====================


                       Mac Address :

                       Port num    :











actions->        <Edit>           <Save>           <Quit>
                           Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Edit static MAC address

1. Press the **<Edit>** key to modify a static MAC address.
2. Choose the MAC address that you want to modify and then press **Enter**.
3. Press the **<Edit>** key to modify the desired items.
4. Press **Esc** to go back to the action menu line, and then select **<Save>** to save the new configuration.



```
Mac Address             Port num                Vlan ID
----------------------- ----------------------- -----------------------
000000000012            1                       1

actions->      <Add>      <Edit>      <Delete>      <Save>      <Quit>
                    Add/Edit/Delete static MAC addresses.
```



```
                     Mac Address :000000000012

                     Port num    :1

                     Vlan ID     :1

actions->         <Edit>             <Save>             <Quit>
                          Edit static MAC address.
```

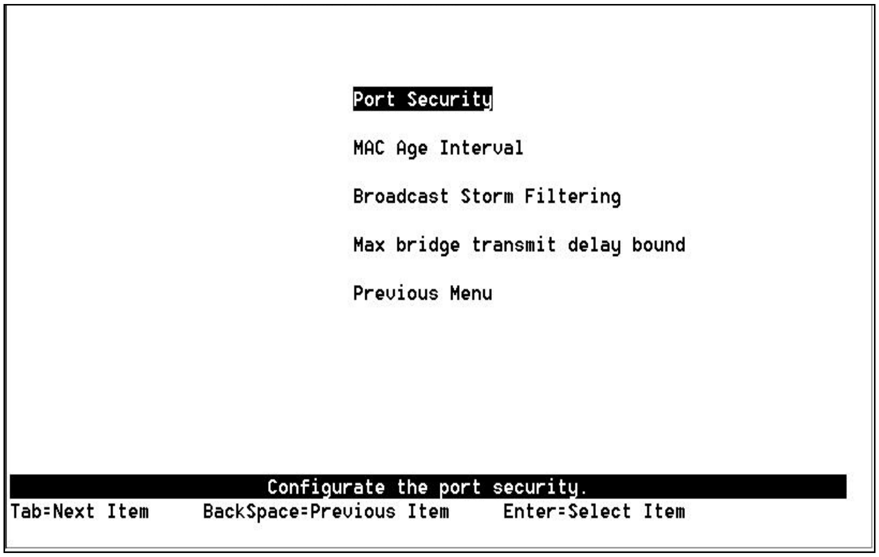
Delete static MAC address

1. Press the **<Delete>** key to delete a static MAC address.
2. Choose the MAC address that you want to delete and then press **Enter**.
3. After deleting the static MAC address, press **<Save>** to have the changes take effect.

3.3.6.2 Filter MAC Address

From this screen, add, edit, or delete filter MAC addresses.

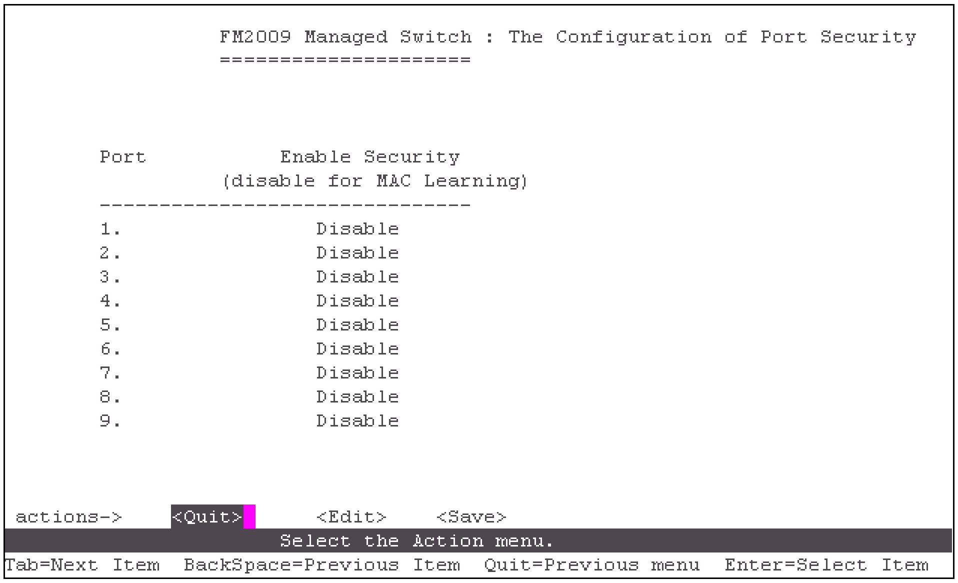
3.3.7 Miscellaneous Configuration



```
                    Port Security

                    MAC Age Interval

                    Broadcast Storm Filtering

                    Max bridge transmit delay bound

                    Previous Menu




               Configurate the port security.
Tab=Next Item     BackSpace=Previous Item     Enter=Select Item
```

3.3.7.1 Port Security

By default, the port security feature is disabled for each port to allow for address learning. When port security is enabled, the port will only accept incoming packets from a known static MAC address. The user can enable port security on a port, and then use the *Static MAC Address* page to define a list of MAC addresses that can use the secure port.

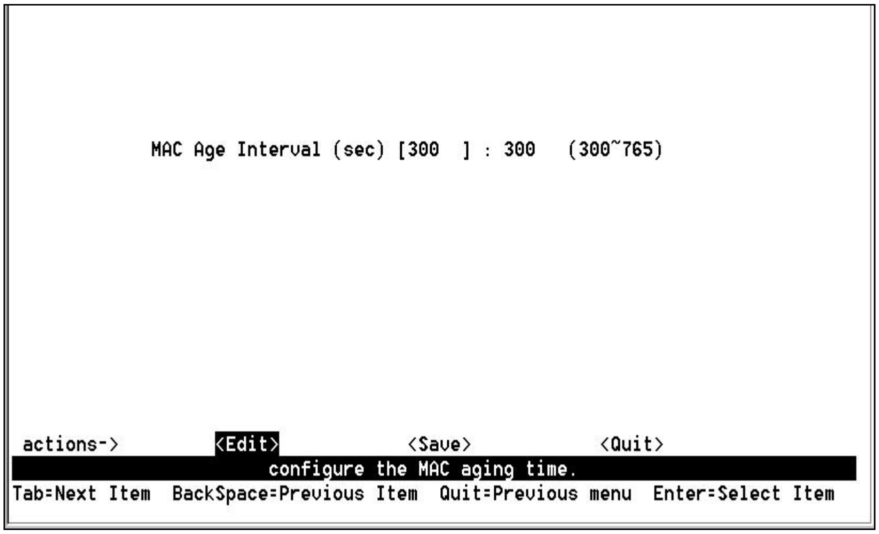


```
              FM2009 Managed Switch : The Configuration of Port Security
              =====================



      Port            Enable Security
              (disable for MAC Learning)
      -------------------------------
      1.                 Disable
      2.                 Disable
      3.                 Disable
      4.                 Disable
      5.                 Disable
      6.                 Disable
      7.                 Disable
      8.                 Disable
      9.                 Disable


actions->     <Quit>       <Edit>    <Save>
                       Select the Action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Select **<Edit>** to enable or disable the port security.
Press the **Space** bar to toggle between enabled and disabled on each port.
Press **Esc** to go back to the action menu line, and then select **<Save>** to save the new configuration.

3.3.7.2 MAC Age Interval

From this screen, you may enter the time (in seconds) that an inactive MAC address remains in the switch's address table. The valid range is 300–765 seconds. The default is 300 seconds.



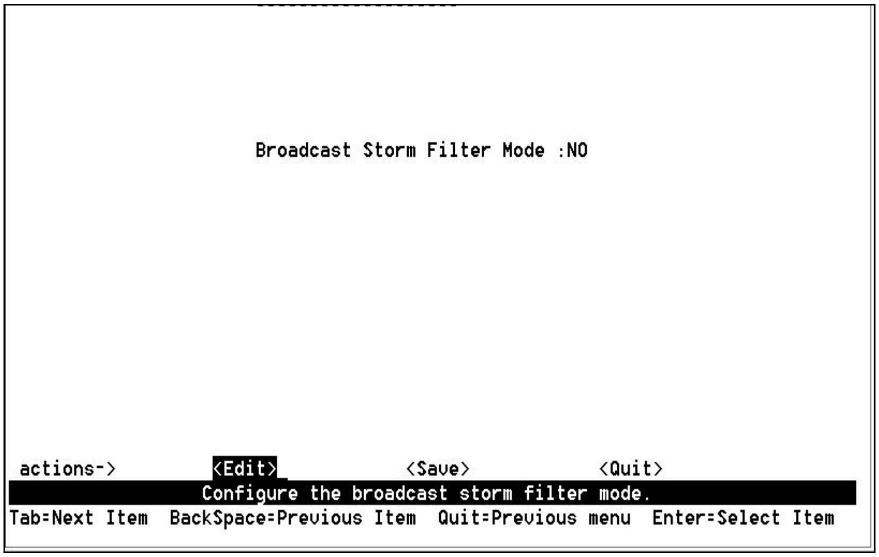
```
          MAC Age Interval (sec) [300  ] : 300   (300~765)









actions->        <Edit>          <Save>          <Quit>
                     configure the MAC aging time.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Actions->
<Edit>: Configure all items. When finished, press **Esc** to go back to the action menu line.
<Save>: Saves the new configurations.
<Quit>: Exits this page and returns to the previous menu.

3.3.7.3 Broadcast Storm Filtering

From this page you may configure the broadcast storm filter. Press **<Edit>** to proceed to configure the broadcast storm filter.

Press the **Spacebar** to choose the threshold value. This is the percentage of total traffic that may be broadcast before the filter takes effect. Valid threshold values are 5%, 10%, 15%, 20%, 25% and NO.

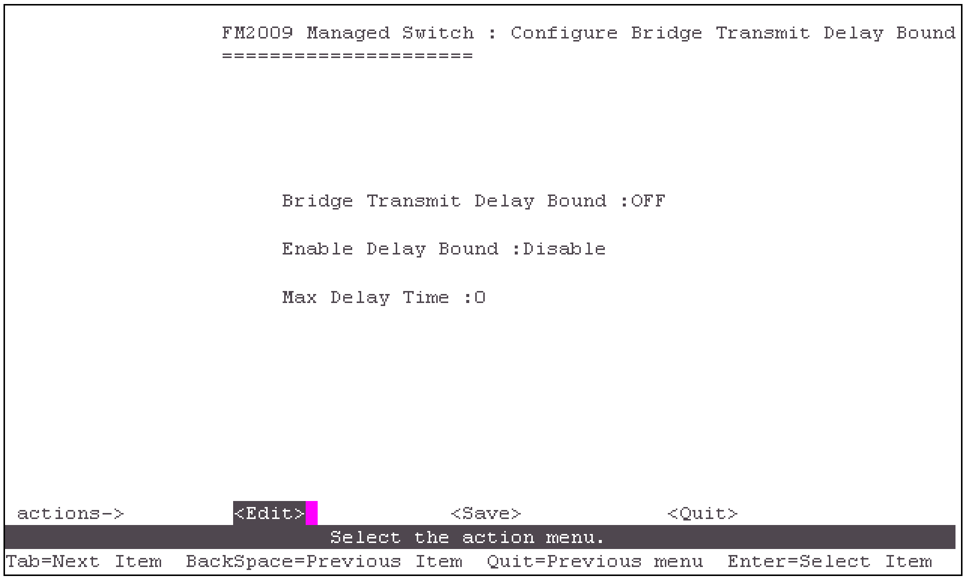


```
Broadcast Storm Filter Mode :NO

actions->        <Edit>        <Save>        <Quit>
Configure the broadcast storm filter mode.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Actions->
<Edit>: Configure all items. When finished, press **Esc** to go back to the action menu line.
<Save>: Saves the new configurations.
<Quit>: Exits this page and returns to the previous menu.

3.3.7.4 Max bridge transmit delay bound

- **Max bridge transmit delay bound:** Limits the packet queue time in the switch. If enabled, the packets will be *dropped* from the queue after the time has expired. Press the **Space** bar to set the time. The options are 1 second, 2 seconds, 4 seconds and off. The default is 1 second
- **Enable Delay Bound:** Limits the low priority packets' queuing time in the switch. If enabled, the low priority packets that stay in the switch past the *Max Delay Time* will be *sent*. Press the **Space** bar to enable or disable this function
  Note: Make sure that *Max bridge transit delay bound control* is enabled before enabling *Delay Bound*.
- **Max Delay Time:** Sets the time that low priority packets may queue in switch. The valid range is 1–255 ms.



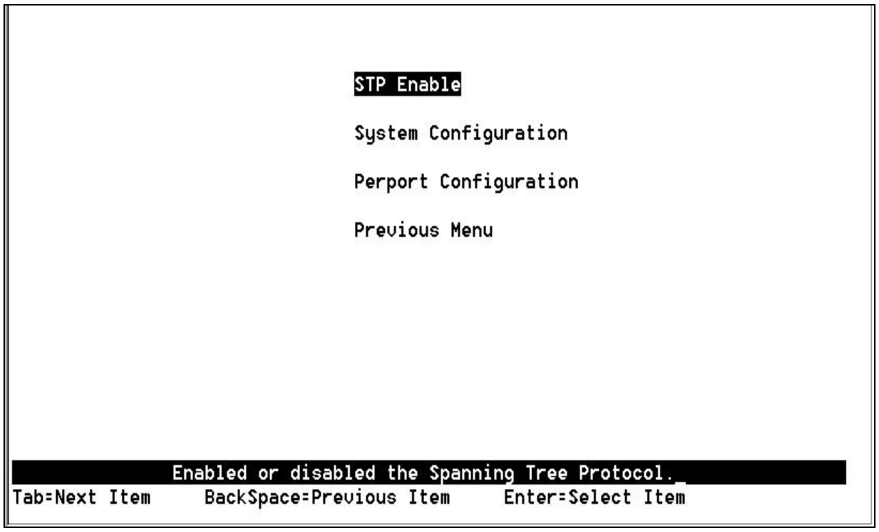
```
                  FM2009 Managed Switch : Configure Bridge Transmit Delay Bound
                  =====================



                       Bridge Transmit Delay Bound :OFF

                       Enable Delay Bound :Disable

                       Max Delay Time :0







 actions->          <Edit>            <Save>            <Quit>
                            Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

NOTE: Make sure that "Max bridge transit delay bound control" is enabled before enabling Delay Bound.

Actions->
<Edit>: Configure all items. When finished, press **Esc** to go back to the action menu line.
<Save>: Saves the new configurations.
<Quit>: Exits this page and returns to the previous menu.

3.4 Protocol Related Configuration

3.4.1 Spanning Tree Protocol (STP)

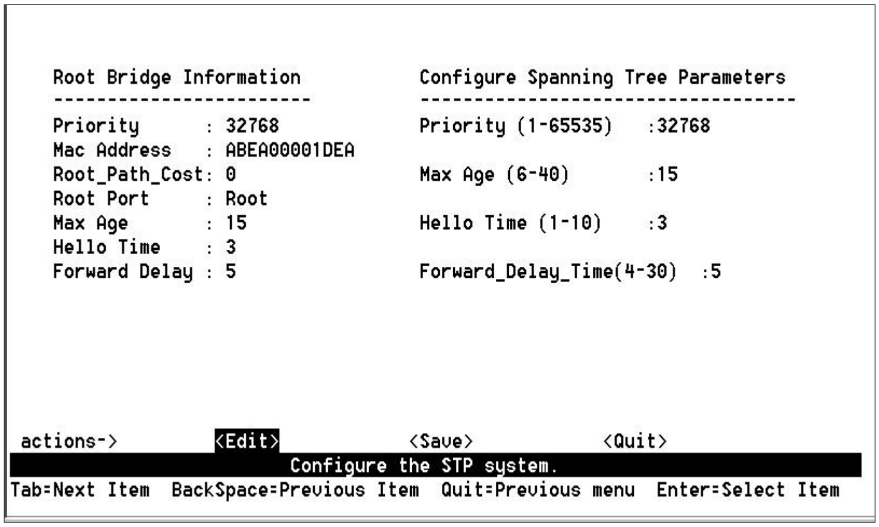


```
                    STP Enable

                    System Configuration

                    Perport Configuration

                    Previous Menu

               Enabled or disabled the Spanning Tree Protocol._
Tab=Next Item     BackSpace=Previous Item     Enter=Select Item
```

3.4.1.1 STP Enable

On this screen you may enable or disable the Spanning Tree function. Press the **Space** bar to toggle between *Enable* and *Disable*.

3.4.1.2 System Configuration



```
   Root Bridge Information         Configure Spanning Tree Parameters
   ------------------------        -----------------------------------
   Priority      : 32768           Priority (1-65535)   :32768
   Mac Address   : ABEA00001DEA
   Root_Path_Cost: 0               Max Age (6-40)       :15
   Root Port     : Root
   Max Age       : 15              Hello Time (1-10)    :3
   Hello Time    : 3
   Forward Delay : 5               Forward_Delay_Time(4-30)  :5




actions->         <Edit>           <Save>          <Quit>
                          Configure the STP system.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

On the left of this screen, you can view the Root Bridge Information. On the right, you can configure new values for the STP parameters.

Bridge Priority

Setting the Bridge Priority to a low value will increase the likelihood that the current bridge will become the root bridge. If the current bridge is located physically near the center of your network, you may wish to decrease the Bridge Priority from its default value of 32768 to make it become the root bridge. If the current bridge is near the edge of your network, it is best to leave the value of the Bridge Priority at its default setting.

Hello Time

This is the time period between BPDUs transmitted by each bridge. The default setting is 3 seconds.

Maximum Age

Each bridge should receive regular configuration BPDUs from the direction of the root bridge. If the maximum age timer expires before the bridge receives another BPDU, it assumes that a change in the topology has

occurred, and it begins recalculating the spanning tree. The default setting for Maximum Age is
15 seconds.

Forward Delay

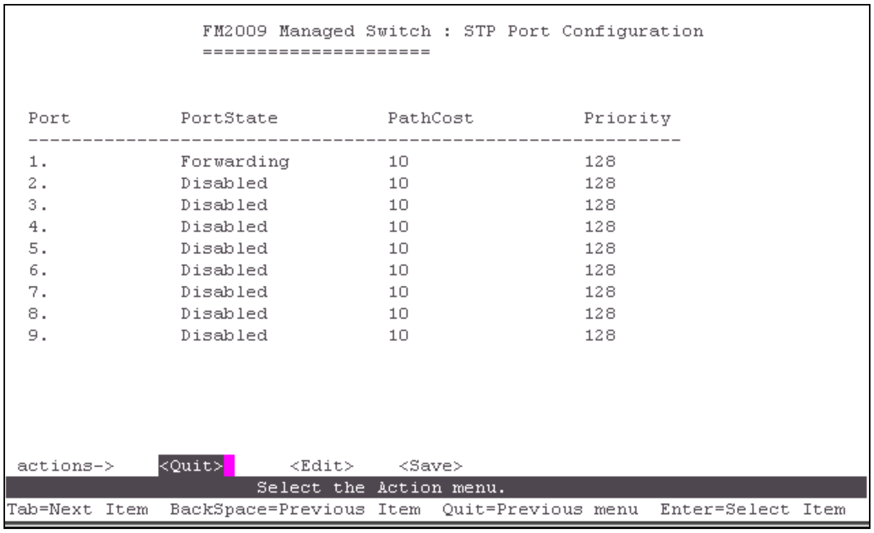
After a recalculation of the spanning tree, the Forward Delay parameter regulates the delay before each port begins transmitting traffic. If a port begins forwarding traffic too soon (before a new root bridge has been selected), the network can be adversely affected. The default value for Forward Delay is 5 seconds.

Note: The above parameters (Hello Time, Maximum Age and Forward Delay) are constrained by the following formula:

(Hello Time + 1) <= Maximum Age <= 2 x (Forward Delay – 1)

In general, reducing the values of these timers will make the spanning tree react faster when the topology changes, but may cause temporary loops as the tree stabilizes in its new configuration. Increasing the values of these timers will make the tree react more slowly to changes in topology, but will make an unintended reconfiguration less likely. All of the bridges on the network will use the values set by the root bridge. It is only necessary to reconfigure that bridge if you wish to change the parameters.

3.4.1.3 Per-port Configuration



```
                FM2009 Managed Switch : STP Port Configuration
                ====================

  Port          PortState         PathCost          Priority
  ------------------------------------------------------------
  1.            Forwarding        10                128
  2.            Disabled          10                128
  3.            Disabled          10                128
  4.            Disabled          10                128
  5.            Disabled          10                128
  6.            Disabled          10                128
  7.            Disabled          10                128
  8.            Disabled          10                128
  9.            Disabled          10                128




actions->     <Quit>      <Edit>    <Save>
                       Select the Action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

PortState: View the spanning tree status for each port.

PathCost: Port path cost is the spanning tree parameter that assigns a cost factor to each port. The lower the assigned port path cost is, the more likely that port will be accessed. The default port path cost for a 10Mbps or 100Mbps port is the result to the equation:

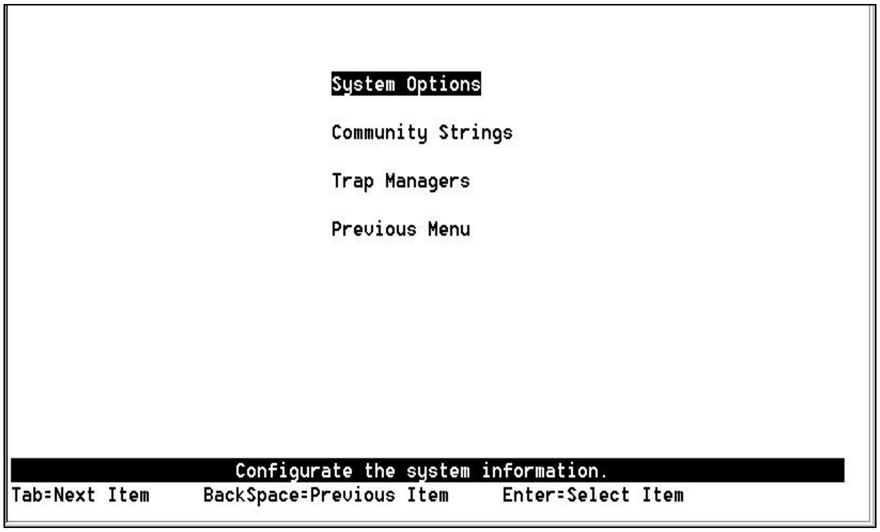
Path cost = 1000/LAN speed (in Mbps)

Therefore, for ports operating at 10Mbps, the default port path cost is 100. For ports operating at 100Mbps, it is 10. If you change the value, you need to restart the switch for the change to take effect.

Priority: The port priority is a spanning tree parameter that ranks each port, so that if two or more ports have the same path cost, the STP selects the path with the highest priority (the lowest numerical value). By changing the priority of a port, you can make it more, or less, likely to become the root port. The default value is 128, and the value range is 0 – 255. If you change the value, you need to restart the switch for the change to take effect.

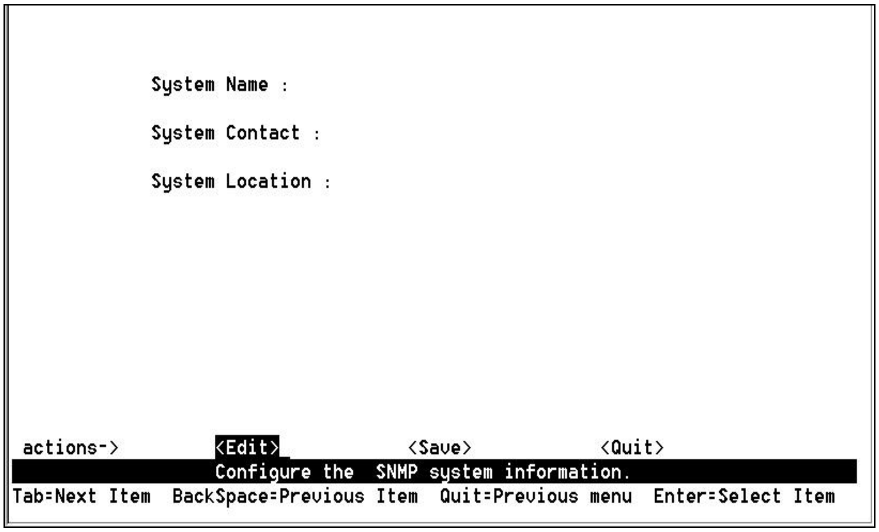
3.4.2 SNMP

Use this page to define management stations as trap managers and to enter SNMP community strings. You can also define a system name, location, and contact person for the switch.



```
                    System Options

                    Community Strings

                    Trap Managers

                    Previous Menu



            Configurate the system information.
Tab=Next Item     BackSpace=Previous Item     Enter=Select Item
```

4.4.2.1 System Options



```
          System Name :

          System Contact :

          System Location :



 actions->         <Edit>          <Save>          <Quit>
                   Configure the  SNMP system information.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

Select **<Edit>** to enter the information, and then select **<Save>** to have the changes take effect.

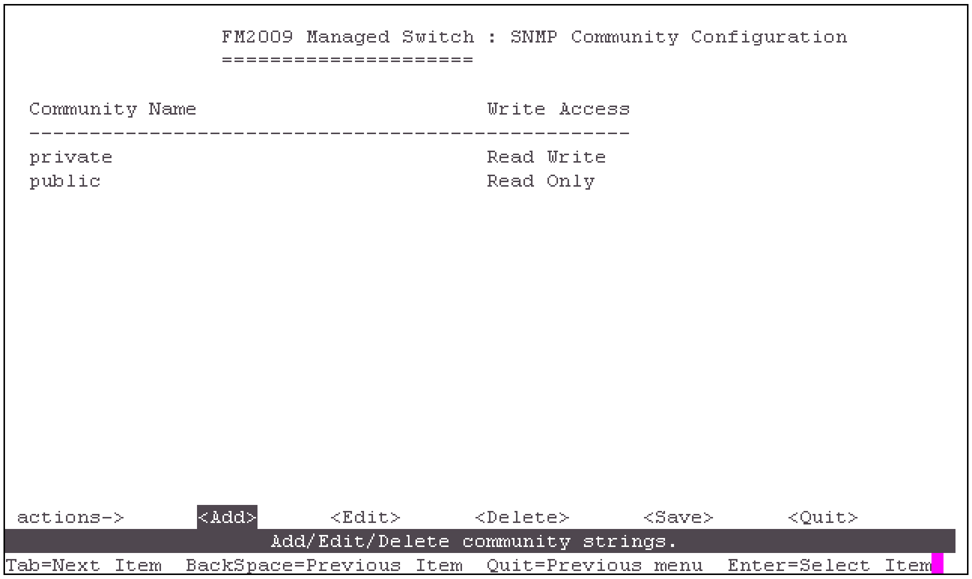
System Name: Enter a name to be used for the switch.
System Contact: Enter the name of contact person or organization.
System Location: Enter the location of the switch.

3.4.2.2 Community Strings

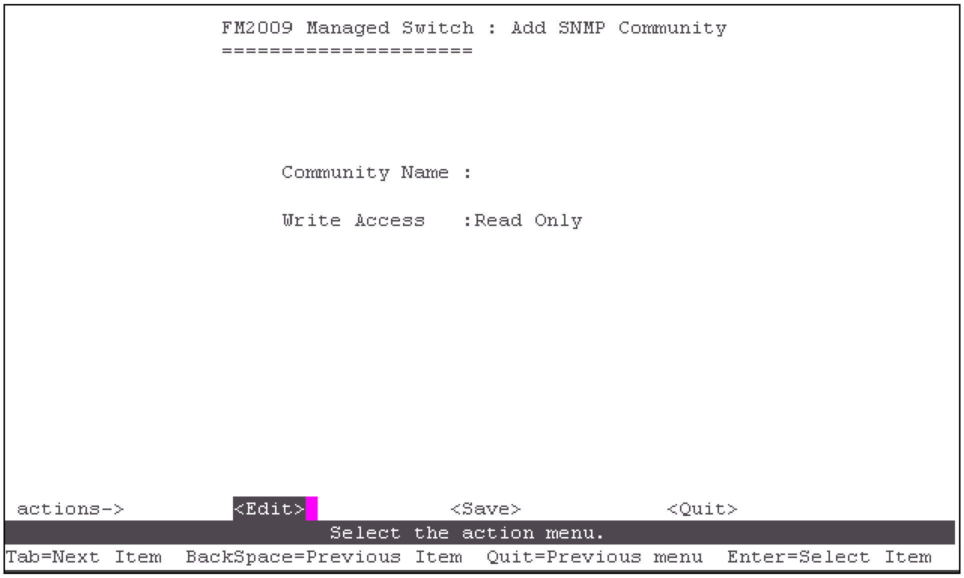
Use this page to enter SNMP community strings.

Community Name: Enter the name of the current string.
Write Access: Designate the access rights of the current string.

- **Restricted**: Read-only enables requests accompanied by this string to retrieve MIB object information
- **Unrestricted**: Read-Write enables requests accompanied by this string to retrieve MIB object information and to set MIB objects to a new value



```
                 FM2009 Managed Switch : SNMP Community Configuration
                 =====================

  Community Name                        Write Access
  -----------------------------------------------------
  private                               Read Write
  public                                Read Only

 actions->      <Add>      <Edit>      <Delete>      <Save>      <Quit>
                      Add/Edit/Delete community strings.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

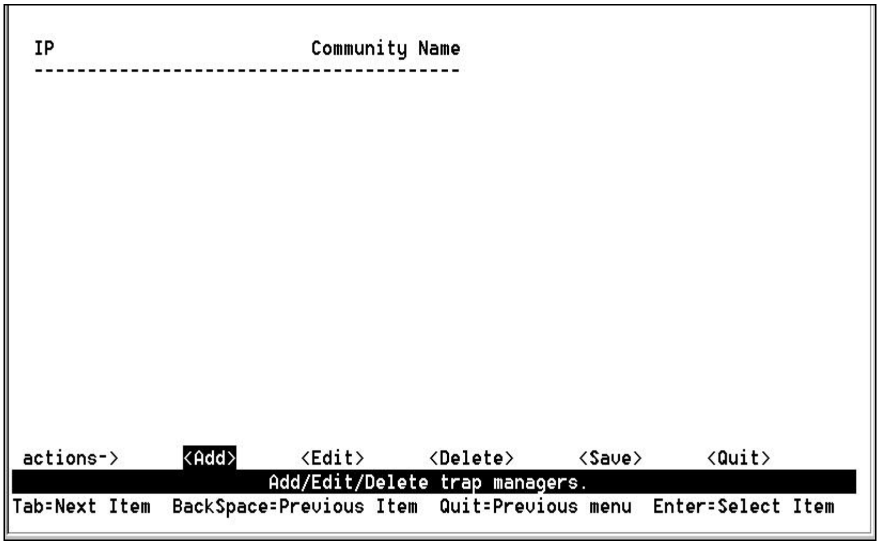


```
                  FM2009 Managed Switch : Add SNMP Community
                  =====================



                       Community Name :

                       Write Access   :Read Only











 actions->          <Edit>            <Save>            <Quit>
                            Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```

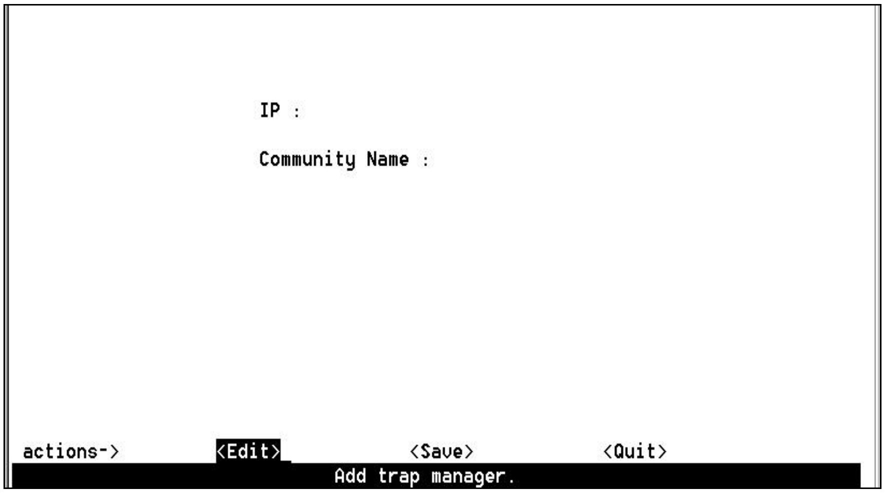
Actions->
<Add>: Creates community strings.
<Edit>: Modifies items. When finished, press **Esc** to go back to the action menu line.
<Delete>: Deletes a community string. Press **<Save>** to have your changes take effect.
<Save>: Saves the new configurations.
<Quit>: Exits this page and returns to the previous menu.

3.4.2.3 Trap Managers

A trap manager is a management station that receives traps, the system alerts generated by the switch. If no trap manager is defined, no traps are issued. Create a trap manager by entering the IP address of the station and a community string.



```
 IP                        Community Name
 ----------------------------------------

actions->       <Add>      <Edit>     <Delete>      <Save>      <Quit>
                         Add/Edit/Delete trap managers.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item
```



```
                       IP :

                       Community Name :

actions->          <Edit>_            <Save>            <Quit>
                              Add trap manager.
```

Actions->

<Add>: Creates a trap manager.

<Edit>: Modifies all items. When finished, press **Esc** to go back to the action menu line.

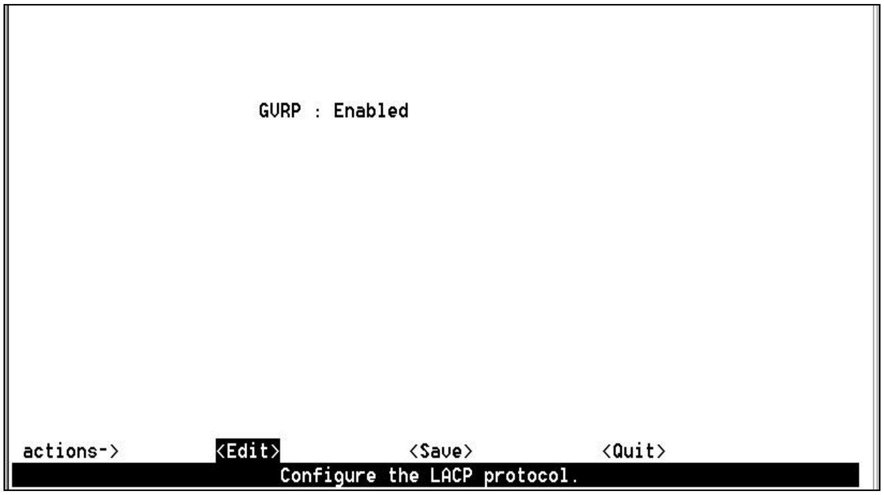
<Delete>: Deletes a trap manager. Press **<Save>** to have your changes take effect.

<Save>: Saves all the new configurations.

<Quit>: Exits this page and returns to the previous menu.

3.4.3 GVRP

On this page you can enable or disable the GVRP (GARP VLAN Registration Protocol) support.
Press the **Space** bar to toggle between Enabled/Disabled.

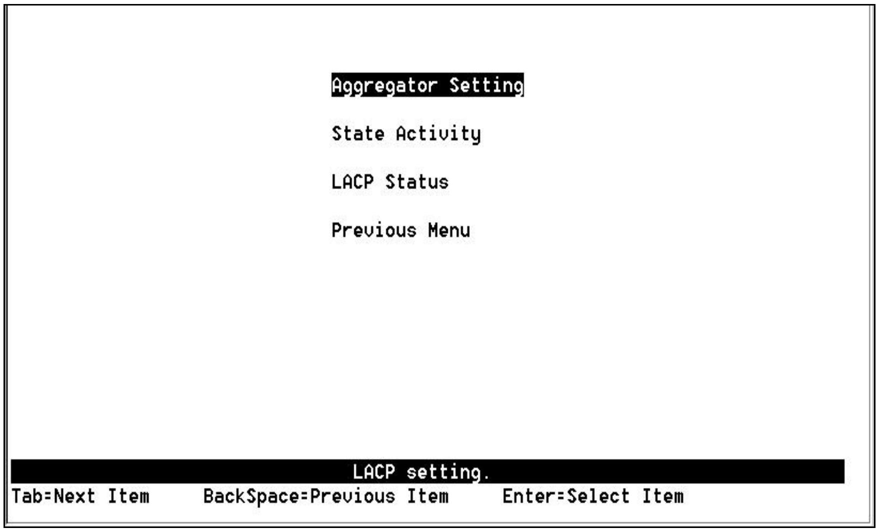


```
GVRP : Enabled
```

Configure the LACP protocol.

Actions->
<Edit>: Configure all items. When finished, press **Esc** to go back to the action menu line.
<Save>: Saves all new configurations.
<Quit>: Exits this page and returns to the previous menu.

3.4.4 Link Aggregation Control Protocol (LACP)

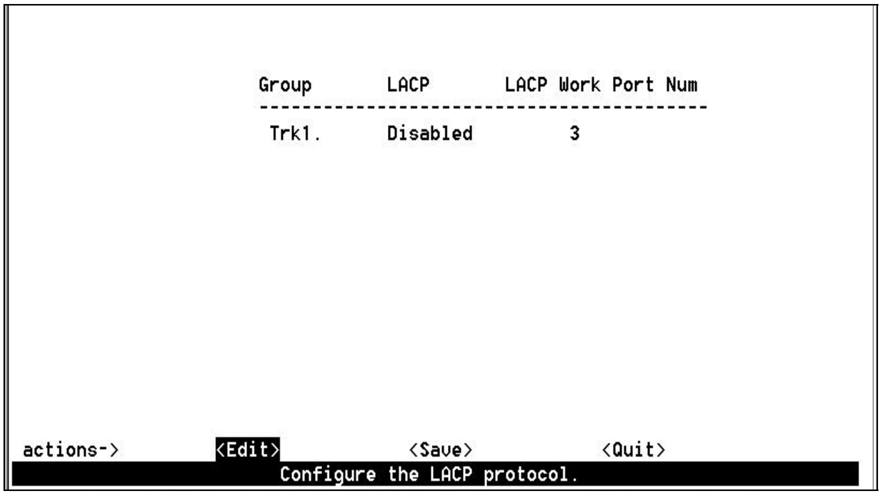


```
                    Aggregator Setting

                    State Activity

                    LACP Status

                    Previous Menu



                      LACP setting.
Tab=Next Item     BackSpace=Previous Item     Enter=Select Item
```

3.4.4.1 Aggregator Setting

Group: Displays the trunk group ID.
LACP: Press the **Space** bar to enable or disable LACP (Link Aggregation Control Protocol) support. If enabled, the group is a LACP static trunking group. If disabled, the group is a local static trunking group.
LACP Work Port Num: The maximum number of ports that can be aggregated at the same time. If using the LACP static trunking group, the extra ports are on standby and able to aggregate if a work port fails. If using a local static trunking group, the number must be the same as the number of group ports.

Note: Before setting LACP support, you first have to set trunking groups in the *Port/Trunk Configuration* page.



```
Group       LACP       LACP Work Port Num
-----------------------------------------
 Trk1.      Disabled        3
```

```
Configure the LACP protocol.
```

Actions->

<Edit>: Configure all items. When finished, press **Esc** to go back to the action menu line.

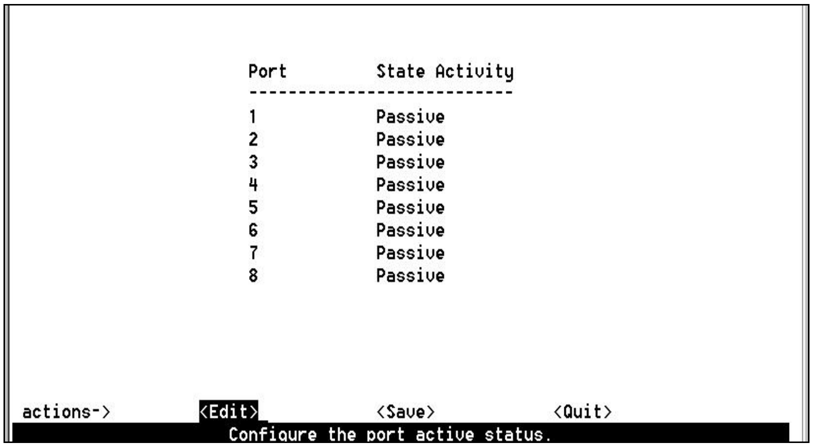
<Save>: Saves all configurations.

<Quit>: Exits this page and returns to the previous menu.

3.4.4.2 State Activity

Active: The port automatically sends LACP protocol packets.

Passive: The port does not automatically send LACP protocol packets, but responds only if it receives LACP protocol packets from another device.



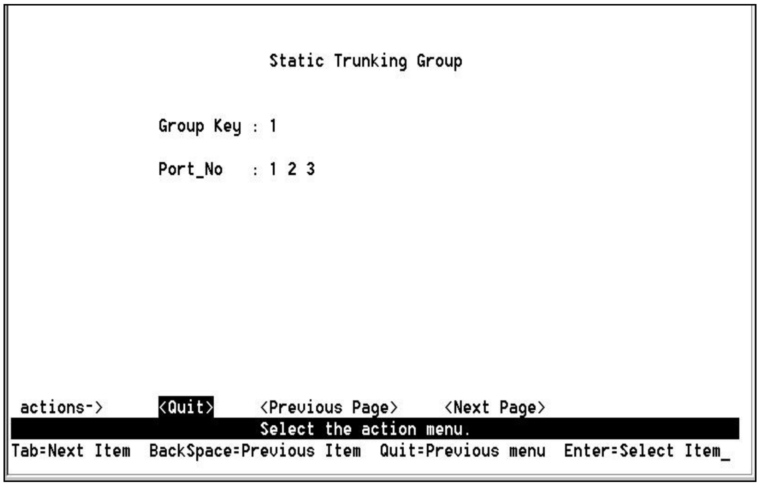
```
Port        State Activity
--------------------------
1           Passive
2           Passive
3           Passive
4           Passive
5           Passive
6           Passive
7           Passive
8           Passive
```

```
Configure the port active status.
```

Actions->
<Edit>: Configure all items. When finished, press **Esc** to go back to the action menu line.
<Save>: Saves all configurations.
<Quit>: Exits this page and returns to the previous menu.

3.4.4.3 LACP Status

In this page, you may view the trunking group information.

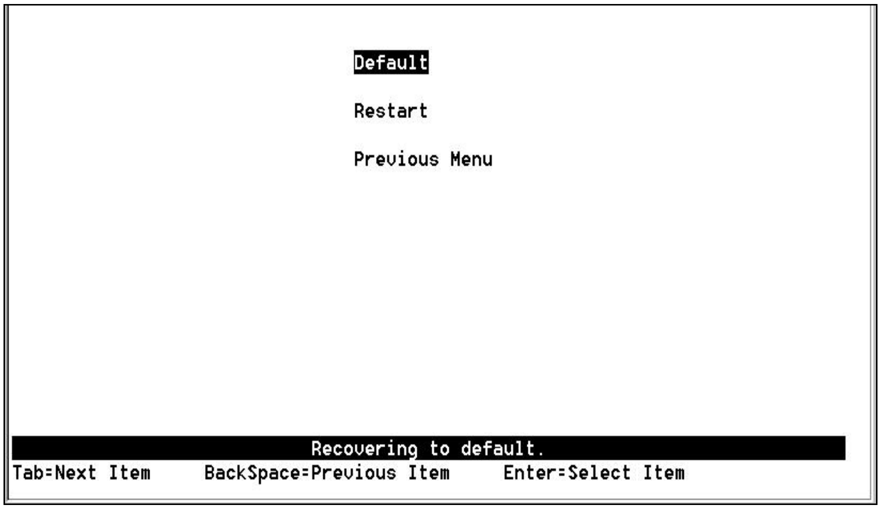


```
                      Static Trunking Group

             Group Key : 1

             Port_No   : 1 2 3




actions->      <Quit>     <Previous Page>     <Next Page>
                          Select the action menu.
Tab=Next Item  BackSpace=Previous Item  Quit=Previous menu  Enter=Select Item_
```

Actions->
<Quit>: Exits this page and returns to the previous menu.
<Previous Page>: Returns to the previous page.
<Next page>: Goes to the next page.

3.5 Reboot Switch

Default: Resets the switch to the default configuration.
Restart: Reboots the switch.

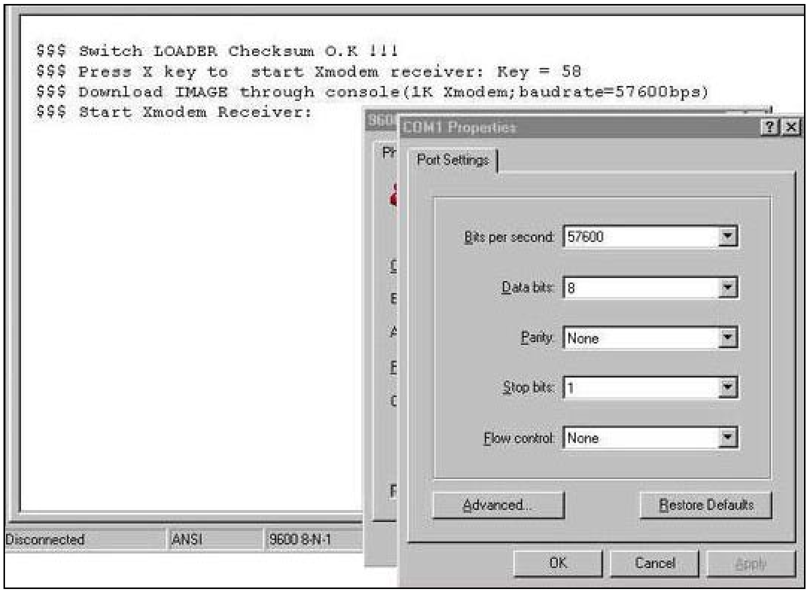


```
Recovering to default.
Tab=Next Item     BackSpace=Previous Item     Enter=Select Item
```

3.6 Xmodem Upgrade

You can load an image file via an Xmodem upgrade during a system restart. Follow the steps below to perform an Xmodem upgrade via the console port.

1. Press the **X** key to start upgrading for Xmodem.
2. Disconnect the terminal and modify the baud rate to 57600bps, then reconnect to the terminal.



```
$$$ Switch LOADER Checksum O.K !!!
$$$ Press X key to  start Xmodem receiver: Key = 58
$$$ Download IMAGE through console(1K Xmodem;baudrate=57600bps)
$$$ Start Xmodem Receiver:
```

COM1 Properties

Bits per second: 57600

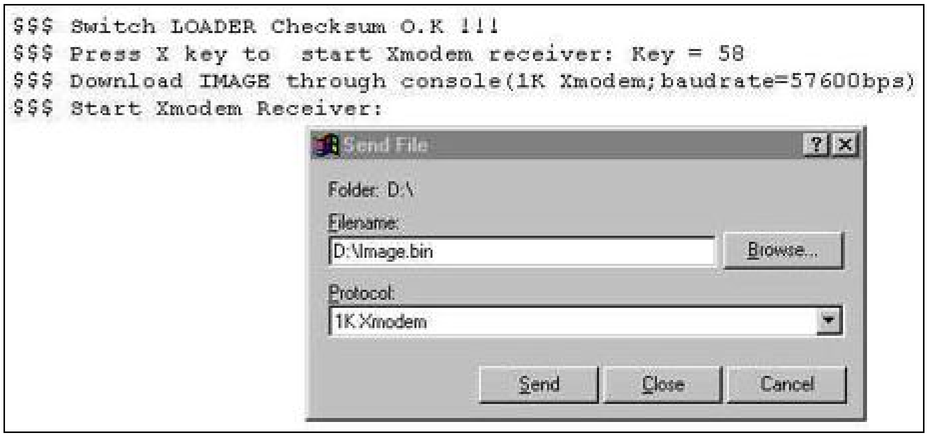
Data bits: 8

Parity: None

Stop bits: 1

Flow control: None

3. Select **send file** under the transfer menu from the menu bar.
4. Press the **Browse** button to select the path to the new image file.
5. Select **1K XModem** protocol and press **Send** button.



```
$$$ Switch LOADER Checksum O.K !!!
$$$ Press X key to  start Xmodem receiver: Key = 58
$$$ Download IMAGE through console(1K Xmodem;baudrate=57600bps)
$$$ Start Xmodem Receiver:
```

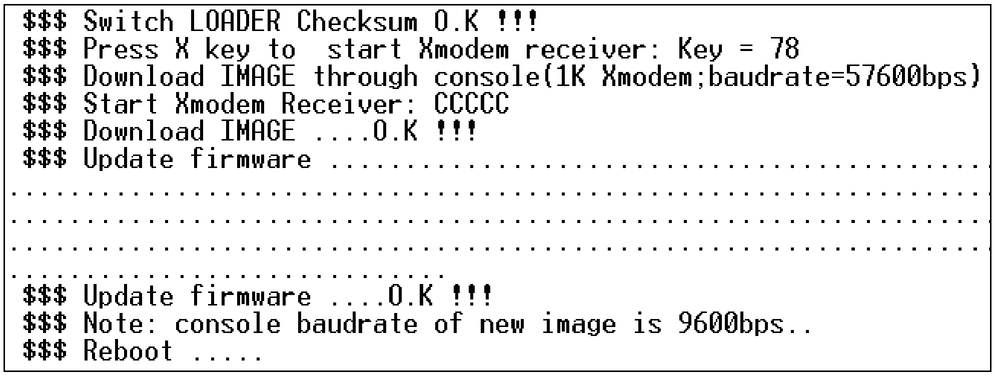
Send File

Folder: D:\

Filename: D:\Image.bin

Protocol: 1K Xmodem

6. After successfully upgrading the new firmware, please modify the baud rate setting of your terminal program to 9600bps.



```
 $$$ Switch LOADER Checksum O.K !!!
 $$$ Press X key to  start Xmodem receiver: Key = 78
 $$$ Download IMAGE through console(1K Xmodem;baudrate=57600bps)
 $$$ Start Xmodem Receiver: CCCCC
 $$$ Download IMAGE ....O.K !!!
 $$$ Update firmware ............................................
.................................................................
.................................................................
.................................................................
.............................
 $$$ Update firmware ....O.K !!!
 $$$ Note: console baudrate of new image is 9600bps..
 $$$ Reboot .....
```

4. Web-Based Management

This section introduces the configuration and functions of the web-based management of the switch.

The FM2009 provides an embedded HTML website residing in flash memory that allows users to manage the switch from anywhere on the network using a standard web browser.

Note: For those who use Windows 2000 and have installed Service Pack#2, the web management function may have display problems if the IE version is 5.5 or older.

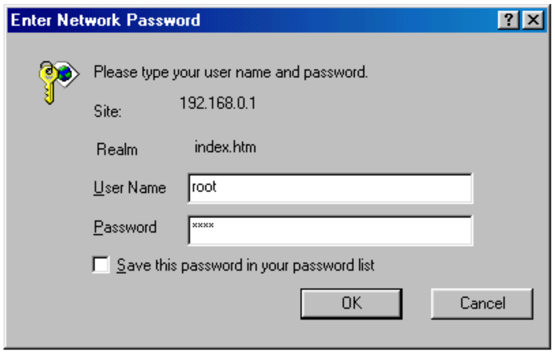
Web Management Function

1. The web management function uses a web browser to manage and monitor the switch. The switch has the following default values:

IP Address:	192.168.0.1
User Name:	**root**
Password:	**root**

If you need to change the IP Address immediately, you can use the console mode to modify it.

2. Launch your web browser and enter **http://192.168.0.1** in the URL field. When prompted, type the user name and password and click **OK**.



Enter Network Password

Please type your user name and password.

Site: 192.168.0.1

Realm index.htm

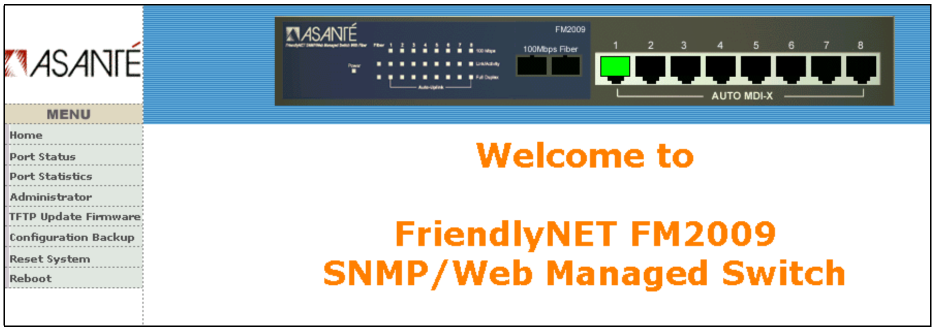
User Name: root

Password: ****

□ Save this password in your password list

4.1 Home Page

After entering the user name and password, you will come to the Home page, as shown below. The following pages may be accessed from the *Home* page:



Welcome to

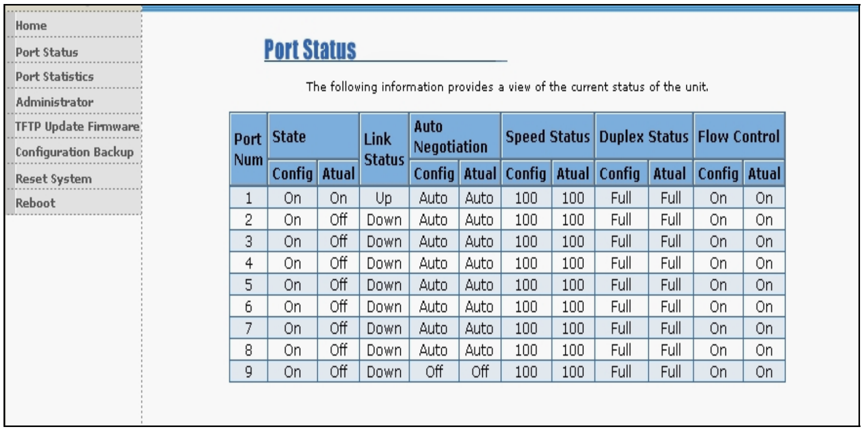
FriendlyNET FM2009
SNMP/Web Managed Switch

- Port Status
- Port Statistics
- Administrator
- TFTP Update Firmware
- Configuration Backup
- Reset System
- Reboot

4.2 Port Status

The following information is displayed in the *Port Status* page:

- **State:** Displays each port's status; off or on depending on the user's setting
- **Link Status:** Displays each port's link status (up or down)
- **Auto Negotiation:** Displays each port's auto-negotiation mode
- **Speed status:** Displays each port's link speed: Port 1-8 are 10/100Mbps, Port 9 is 100 Mbps only
- **Duplex status:** Displays each port's duplex mode (full or half)
- **Flow control:** Displays each port's flow control status (On is enabled, Off is disabled)
- **Config:** Displays the current configuration setting
- **Actual:** Displays the negotiation result



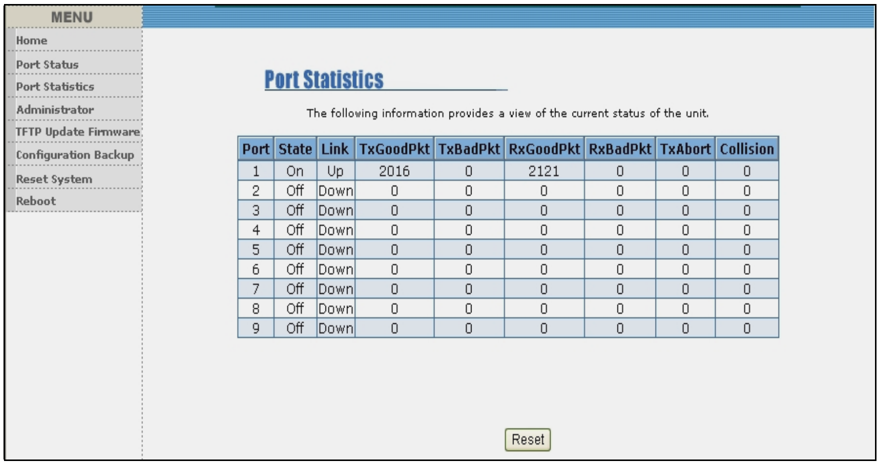
Port Status

The following information provides a view of the current status of the unit.

Port Num	State		Link Status	Auto Negotiation		Speed Status		Duplex Status		Flow Control	
	Config	Atual		Config	Atual	Config	Atual	Config	Atual	Config	Atual
1	On	On	Up	Auto	Auto	100	100	Full	Full	On	On
2	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
3	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
4	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
5	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
6	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
7	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
8	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
9	On	Off	Down	Off	Off	100	100	Full	Full	On	On

4.3 Port Statistics

The Port Statistics page provides the current status of the unit.



Port Statistics

The following information provides a view of the current status of the unit.

Port	State	Link	TxGoodPkt	TxBadPkt	RxGoodPkt	RxBadPkt	TxAbort	Collision
1	On	Up	2016	0	2121	0	0	0
2	Off	Down	0	0	0	0	0	0
3	Off	Down	0	0	0	0	0	0
4	Off	Down	0	0	0	0	0	0
5	Off	Down	0	0	0	0	0	0
6	Off	Down	0	0	0	0	0	0
7	Off	Down	0	0	0	0	0	0
8	Off	Down	0	0	0	0	0	0
9	Off	Down	0	0	0	0	0	0

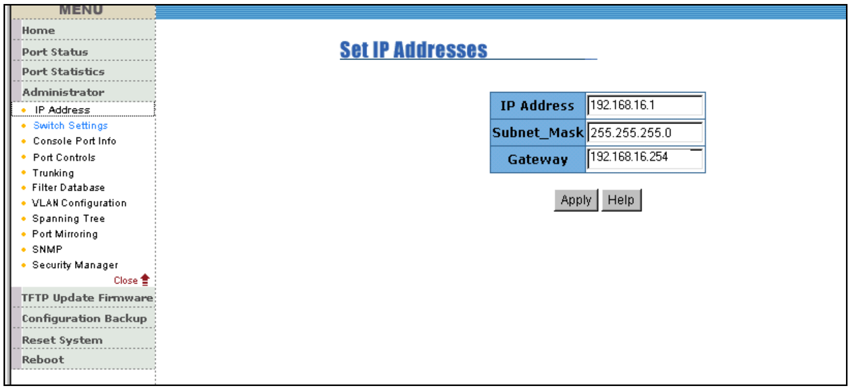
4.4 Administrator

The management functions include:

IP Address, Switch Settings, Console Port Information, Port Controls, Link Aggregation, Filter Database, VLAN Configuration, Spanning Tree, Port Mirror, SNMP, Security Manager, TFTP Update Firmware, Configuration Backup, Reset System and Reboot.

4.4.1 IP Address

From this page, you can change the IP Address from the default value (recommended). Fill in the new values, then click the **Apply** button. You must reset switch and then enter the new IP address into the browser's URL window to access the web management interface. You may also need to change your computer's IP address to the same network as the switch's new IP address.



Set IP Addresses

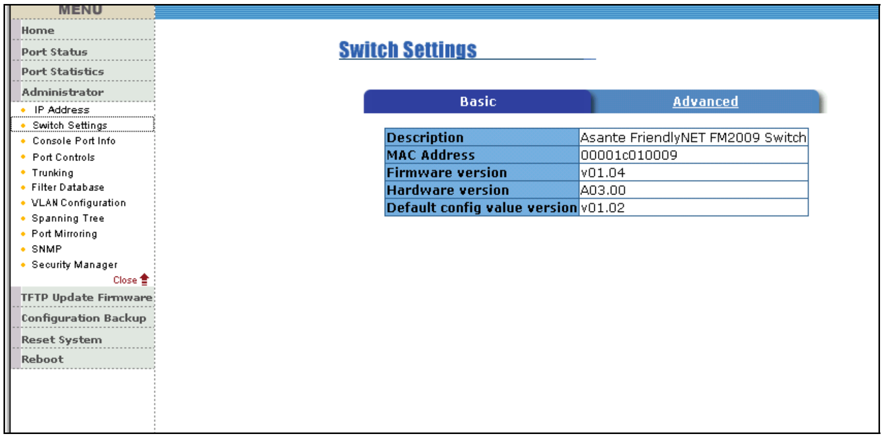
IP Address	192.168.16.1
Subnet_Mask	255.255.255.0
Gateway	192.168.16.254

4.4.2 Switch Settings

4.4.2.1 Basic

The *Basic Switch Settings* page displays the current information of the switch. Click the **Basic** button on the *Switch Settings* page to display the following information:

- **Description:** Displays the name of the device
- **MAC Address:** Displays the unique hardware address assigned by the manufacturer
- **Firmware Version:** Displays the current firmware version
- **Hardware Version:** Displays the hardware version
- **Default config value version:** Displays the D*efault config value* version



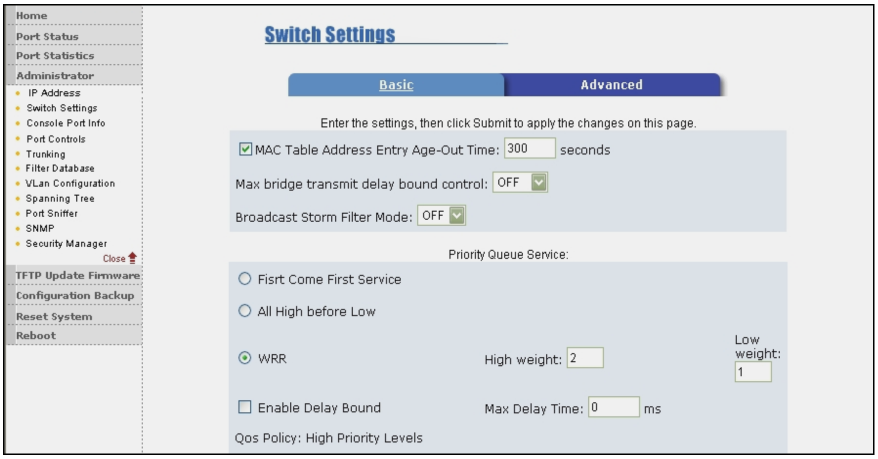
Switch Settings

Description	Asante FriendlyNET FM2009 Switch
MAC Address	00001c010009
Firmware version	v01.04
Hardware version	A03.00
Default config value version	v01.02

4.4.2.2 Advanced

From the *Switch Settings* page, click the **Advanced** button to display or configure the following information:

- **MAC Address Age-out Time:** Enter the number of seconds that an inactive MAC address can remain in the switch's address table. The valid range is 300–765 seconds, the default is 300 seconds
- **Max bridge transit delay bound control:** Limits the packets' queuing time in switch. If enabled, the packets in the queue will be dropped when the time expires. The valid values are 1 second, 2 seconds, 4 seconds and off (default is 1 second)
- **Broadcast Storm Filter:** To configure broadcast storm control, enable it and set the upper threshold for individual ports. The threshold is the percentage of the port's total bandwidth used by broadcast traffic. When broadcast traffic for a port rises above the threshold you set, broadcast storm control becomes active. The valid threshold values are 5%, 10%, 15%, 20%, 25% and off



Switch Settings

Enter the settings, then click Submit to apply the changes on this page.

☑ MAC Table Address Entry Age-Out Time: 300 seconds

Max bridge transmit delay bound control: OFF

Broadcast Storm Filter Mode: OFF

Priority Queue Service:

○ Fisrt Come First Service

○ All High before Low

● WRR High weight: 2 Low weight: 1

□ Enable Delay Bound Max Delay Time: 0 ms

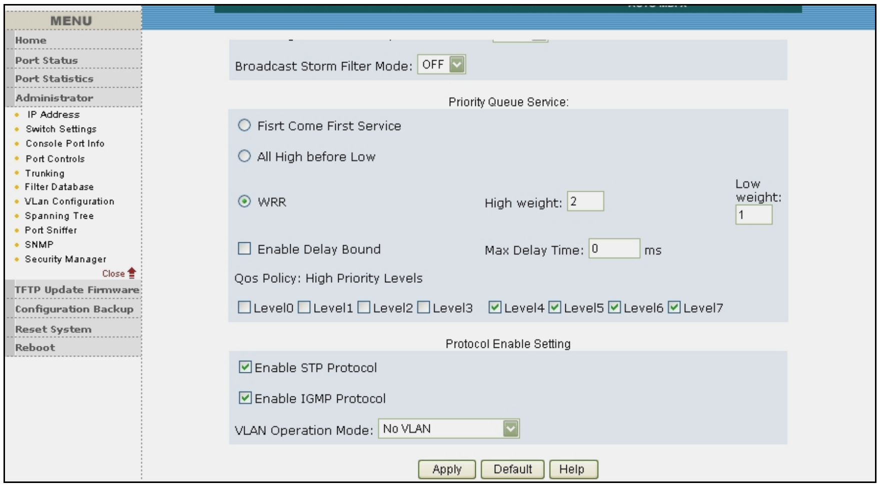
Qos Policy: High Priority Levels

.

Priority Queue Service settings:

- **First Come First Served:** The sequence of packets sent depends on their order of arrival
- **All High before Low:** All high priority packets are sent before any low priority packets
- **Weighted Round Robin (WRR):** Select the preference given to packets in the switch's high-priority queue. These options represent the number of high priority packets sent before one low priority packet is sent. For example, a 5:2 ratio means that the switch sends 5 high priority packets before sending 2 low priority packets
- **Enable Delay Bound:** Limit the low priority packets queuing time in switch. Default Max Delay Time is 255ms. If the low priority packet stays in switch longer than the *Max Delay Time*, it will be sent. The valid range is 1–255 ms

  Note: Make sure that *Max bridge transit delay bound control* is enabled before checking the *Enable Delay Bound* box
- **QoS Policy: High Priority Levels:** Select which priority levels are mapped to the high priority output queue.



Broadcast Storm Filter Mode: OFF

Priority Queue Service:

○ Fisrt Come First Service

○ All High before Low

● WRR High weight: 2 Low weight: 1

□ Enable Delay Bound Max Delay Time: 0 ms

Qos Policy: High Priority Levels

□ Level0 □ Level1 □ Level2 □ Level3 ☑ Level4 ☑ Level5 ☑ Level6 ☑ Level7

Protocol Enable Setting

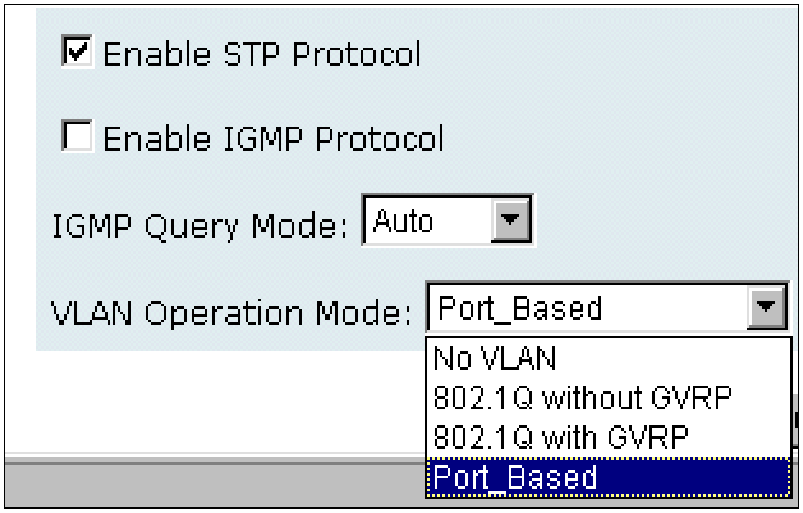
☑ Enable STP Protocol

☑ Enable IGMP Protocol

VLAN Operation Mode: No VLAN

Protocol Enable Settings:

- **Enable Spanning Tree Protocol:** Enabled by default (recommended)
- **Enable Internet Group Multicast Protocol:** IGMP protocol enabled by default
- **VLAN Operation Mode:** Select Port Based, 802.1Q without GVRP, 802.1Q with GVRP, or No VLAN



☑ Enable STP Protocol

□ Enable IGMP Protocol

IGMP Query Mode: Auto

VLAN Operation Mode: Port_Based

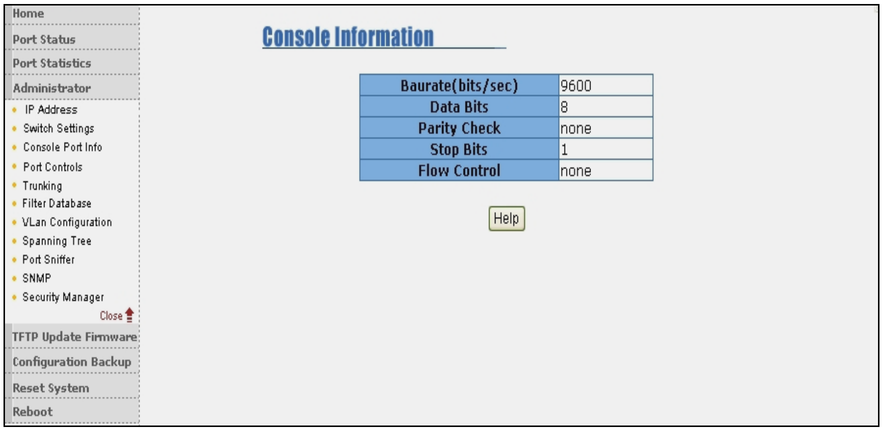
GVRP (GARP [Generic Attribute Registration Protocol] VLAN Registration Protocol)

GVRP allows automatic VLAN configuration between the switch and nodes. If the switch is connected to a device with GVRP enabled, you can send a GVRP request using the VID of a VLAN defined on the switch; the switch will automatically add that device to the existing VLAN.

4.4.3 Console Port Information

The console is a standard UART interface used to communicate with the serial port. You may use Windows HyperTerminal or a similar program to link to the switch. From this page, you may view or configure the desired parameters for your console connection:

Bits per seconds: 9600
Data bits: 8
Parity: none
Stop Bits: 1
Flow control: none



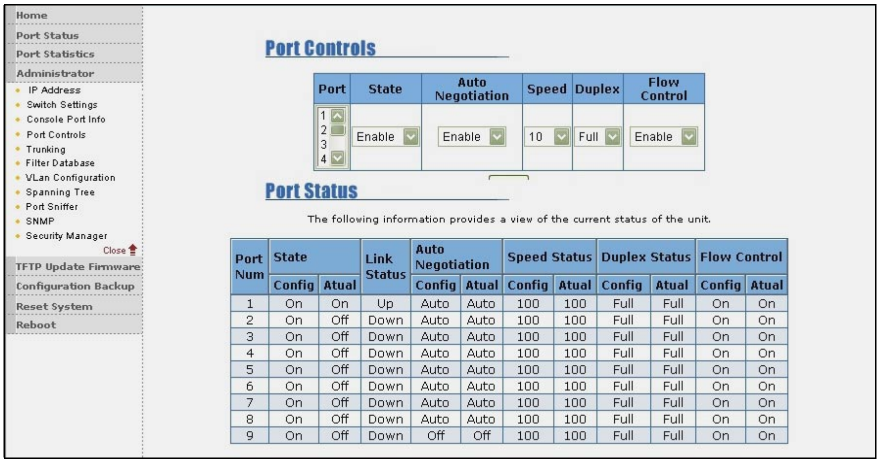
Console Information

Baurate(bits/sec)	9600
Data Bits	8
Parity Check	none
Stop Bits	1
Flow Control	none

4.4.4 Port Controls

From this page you can configure the following parameters:

- **State:** Disable or enable each port
- **Auto Negotiation:** Disable or enable auto negotiation for each port
- **Speed:** Set port speed (100Mbps or 10Mbps) on ports 1-8; port 9 is 100Mbps only
- **Duplex:** Set full-duplex or half-duplex mode for each port
- **Flow Control:** Enable or disable flow control for each port



Port Controls

Port	State	Auto Negotiation	Speed	Duplex	Flow Control
1 2 3 4	Enable	Enable	10	Full	Enable

Port Status

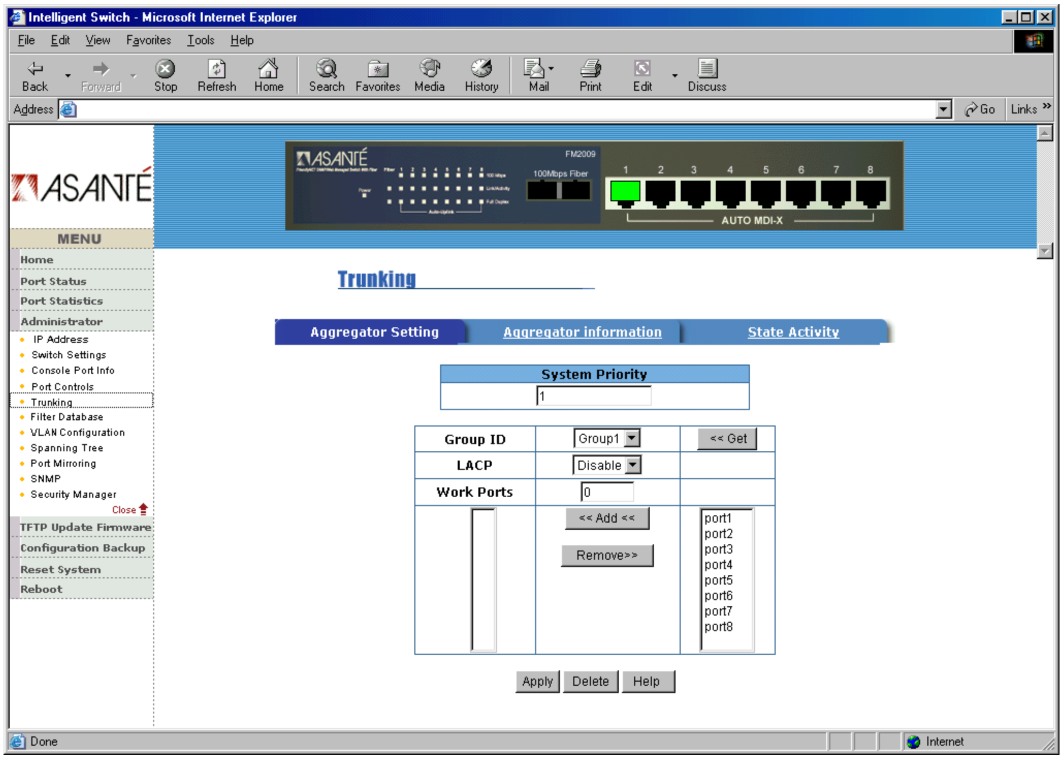
The following information provides a view of the current status of the unit.

Port Num	State		Link Status	Auto Negotiation		Speed Status		Duplex Status		Flow Control	
	Config	Atual		Config	Atual	Config	Atual	Config	Atual	Config	Atual
1	On	On	Up	Auto	Auto	100	100	Full	Full	On	On
2	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
3	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
4	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
5	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
6	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
7	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
8	On	Off	Down	Auto	Auto	100	100	Full	Full	On	On
9	On	Off	Down	Off	Off	100	100	Full	Full	On	On

4.4.5 Trunking

Trunking provides a standardized means for exchanging information between multiple devices on a link. This allows their Link Aggregation Control to reach an agreement on the identity of the Link Aggregation Group, move the link to that Link Aggregation Group, and enable its transmission and reception functions in an orderly manner. Trunk up to eight consecutive ports into a single dedicated connection. This feature can expand bandwidth to a device on the network. **LACP operation requires full-duplex mode.** For more detailed information, please refer to IEEE 802.3ad.

4.4.5.1 Aggregator setting



Trunking

System Priority: 1

Group ID	Group1	
LACP	Disable	
Work Ports	0	
		port1 port2 port3 port4 port5 port6 port7 port8

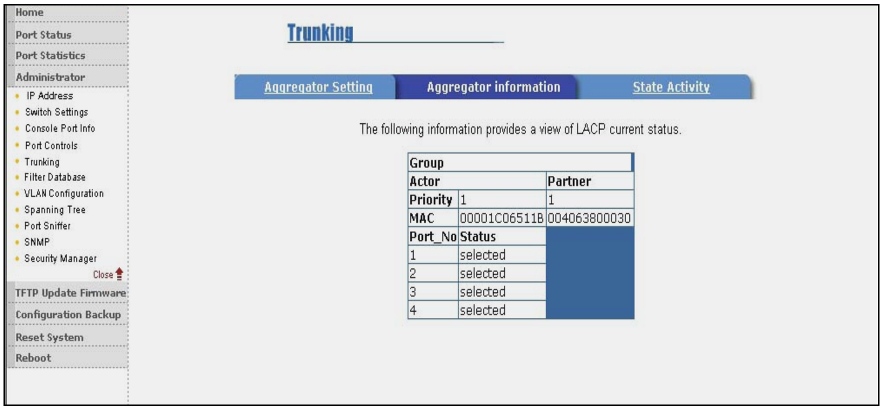
1. **System Priority:** A value used to identify the active LACP. The switch with the lowest value has the highest priority and is selected as the active LACP.
2. **Group ID:** To create an aggregated link across two or more ports, choose the "Group ID" and click **Get**.
3. **LACP:** If enabled, the selected group becomes an LACP static trunking group. If disabled, the selected group becomes a local static trunking group.

   All ports support LACP dynamic trunking groups. If connecting to a device that also supports LACP, the LACP dynamic trunking group will be created automatically.
4. **Work ports:** The maximum number of ports that can be aggregated at the same time. If utilizing a LACP static trunking group, the extra ports are on standby and able to aggregate if another working port fails. If using a local static trunking group, the number must be the same as group ports.

5. Select the ports to join the trunking group
6. If LACP is enabled, you can configure the LACP Active/Passive status on each port.
7. Click **Apply**.

4.4.5.2 Aggregator Information

When setting the LACP aggregator, you can view the related information by clicking *Aggregator Information*.



Trunking

The following information provides a view of LACP current status.

Group		
Actor		Partner
Priority	1	1
MAC	00001C06511B	004063800030
Port_No	Status	
1	selected	
2	selected	
3	selected	
4	selected	

4.4.5.3 State Activity

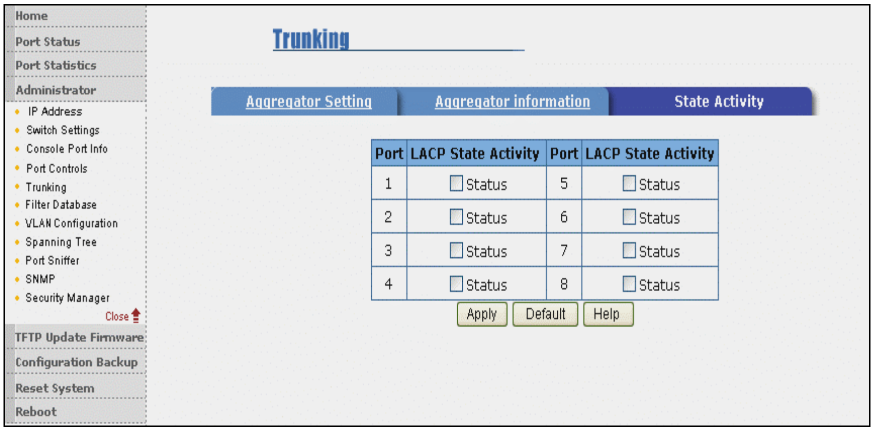
Click on **State Activity** to configure each port to automatically send LACP protocol packets.

Active (*Status* box selected)**:** Check the box in each port to have that port automatically send the LACP protocol packets.
Passive (*Status* box unselected)**:** With the box unchecked, the port will not automatically send the LACP protocol packets, and responds only if it receives LACP protocol packets from the opposite device.

A link having either two active LACP ports or one active port can perform dynamic LACP trunking.

A link that has two *passive* LACP ports will not perform dynamic LACP trunking because both ports are waiting for a LACP protocol packet from the opposite device.

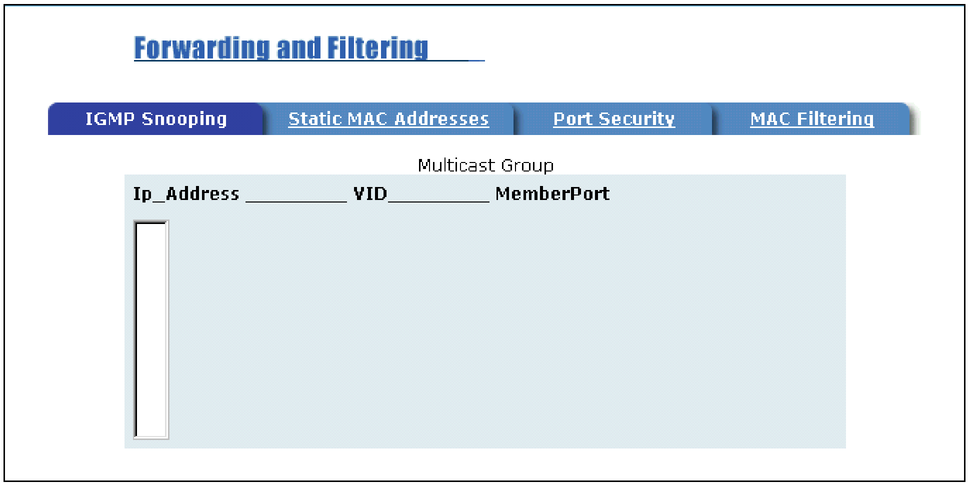
If you select active LACP, the active status will be created automatically when you select the trunking port.



Port	LACP State Activity	Port	LACP State Activity
1	□Status	5	□Status
2	□Status	6	□Status
3	□Status	7	□Status
4	□Status	8	□Status

4.4.6 Filter Database

4.4.6.1 IGMP Snooping



Multicast Group

Ip_Address __________ VID__________ MemberPort

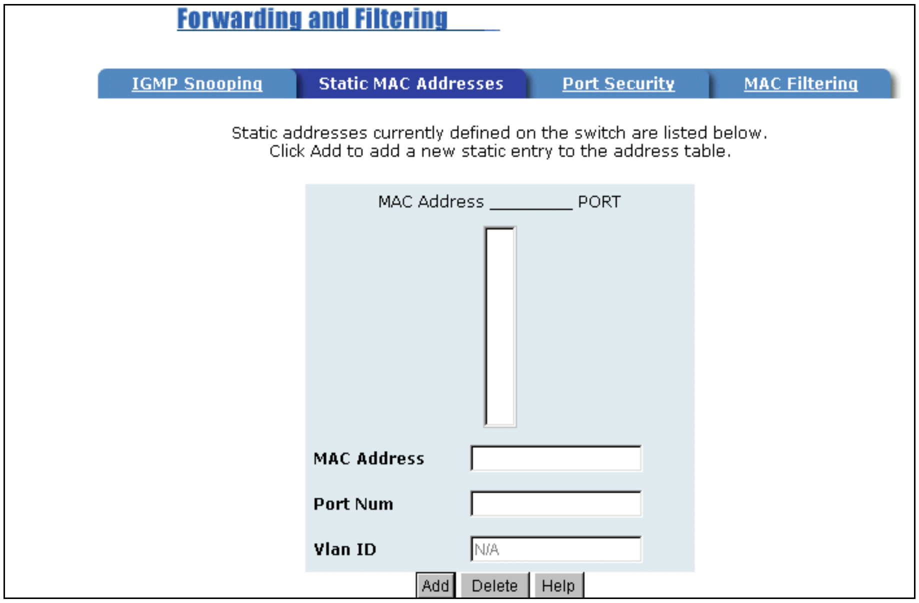
The switch supports IP multicasting. Enable the IGMP protocol on the web interface's *Switch Setting/Advanced* page, and then click the **IGMP Snooping** button to view the multicast group, VID and member port. IP multicast addresses range from 224.0.0.0 through 239.255.255.255.

The Internet Group Management Protocol (IGMP) is an internal protocol of the Internet Protocol (IP) suite. IP manages multicast traffic by using switches, routers, and hosts that support IGMP. Enabling IGMP allows the ports to detect IGMP queries and report packets and manage IP multicast traffic through the switch. IGMP has three types of messages, as described in the table below:

Message	Description
Query	A message sent from the IGMP router or switch asking for a response from each host belonging to the multicast group.
Report	A message sent by a host to the IGMP router or switch to indicate that the host wants to be or is a member of a given group indicated in the report message.
Leave Group	A message sent by a host to the IGMP router or switch to indicate that the host has quit to be a member of a specific multicast group.

4.4.6.2 Static MAC Address

Click the **Static MAC Addresses** button to view or configure the static addresses currently defined on the switch.


Forwarding and Filtering

Static addresses currently defined on the switch are listed below.
Click Add to add a new static entry to the address table.

MAC Address ________ PORT

MAC Address	
Port Num	
Vlan ID	N/A

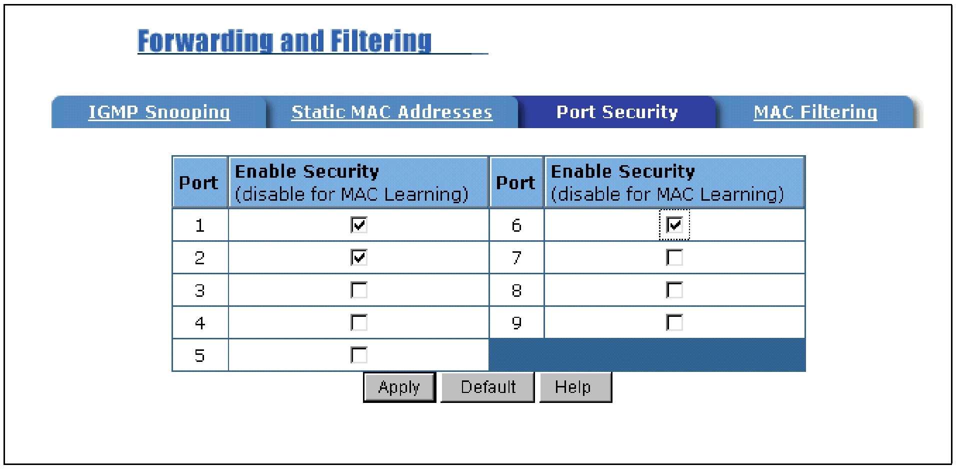
When you add a static MAC address, it remains in the switch's address table, regardless of whether the device is physically connected to the switch. This saves the switch from having to re-learn a device's MAC address when the device is active on the network again.

To add a static MAC address:

1. From the main menu, click **Administrator**, and then click **Filter Database**.
2. Click **Static MAC Addresses**. In the MAC address box, enter the MAC address to and from which the port should permanently forward traffic, regardless of the network activity of the device.
3. In the *Port Number* box, select a port number.
4. If tag-based (IEEE 802.1Q) VLANs are set up on the switch, static addresses are associated with individual VLANs. Type the VID (tag-based VLANs) associated with the MAC address.
5. Click **Add**.

4.4.6.3 Port Security

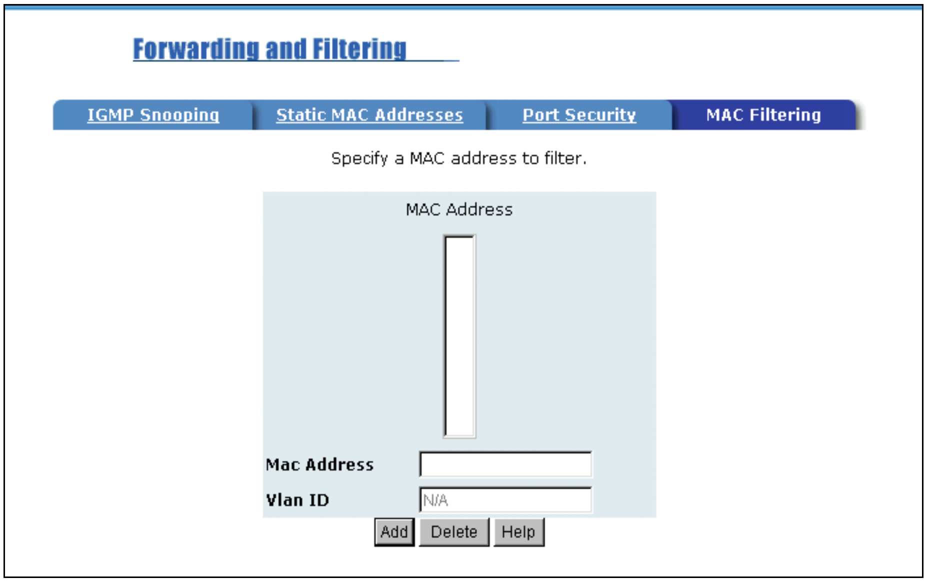
Click the **Port Security** button to enable security. A port in security mode will be “locked” to traffic from devices whose MAC addresses are not in the *Static MAC Addresses* table. Only incoming packets with Source MAC already existing in the address table can be forwarded normally. First, disable the port from learning any new MAC addresses by checking the *Enable Security* box, and then use the static MAC addresses screen to define a list of MAC addresses that can use the secure port. After you are finished entering the settings, click **Submit** to apply the changes to this page.



Port	Enable Security (disable for MAC Learning)	Port	Enable Security (disable for MAC Learning)
1	☑	6	☑
2	☑	7	□
3	□	8	□
4	□	9	□
5	□		

4.4.6.4 MAC Address Filtering

MAC address filtering allows the switch to drop unwanted traffic. Traffic is filtered based on the source or destination addresses. For example, if your network is congested because of high utilization from one MAC address, you can filter all traffic transmitted from that MAC address, restoring network flow while you troubleshoot the problem.



Specify a MAC address to filter.

MAC Address

Mac Address

Vlan ID N/A

To add a MAC address filter

1. From the main menu, click **Administrator**, then click **Filtering Database**.

2. Click **MAC Filtering**.
3. Click **Add**.
4. In the MAC Address box, type the MAC address (without hyphens) to filter.
5. Select the port that will filter traffic from this address.
6. If port-based or tag-based VLANs are configured on the switch, type the name or VID of the VLAN to use the filter.
7. Click **Apply**.

4.4.7 VLAN configuration

A Virtual LAN (VLAN) is a logical network grouping that limits the broadcast domain. It allows you to isolate network traffic so only members of the same VLAN receive traffic from other VLAN members. Creating a VLAN from a switch is logically equivalent to reconnecting a group of network devices to another Layer 2 switch. However, all the network devices are still plugged into the same switch physically. The switch supports port-based and protocol-based VLANs. In the default configuration, VLAN support is enabled and all ports on the switch belong to the default VLAN, whose VLAN ID (VID) is 1.

Note: The default VLAN cannot be deleted.

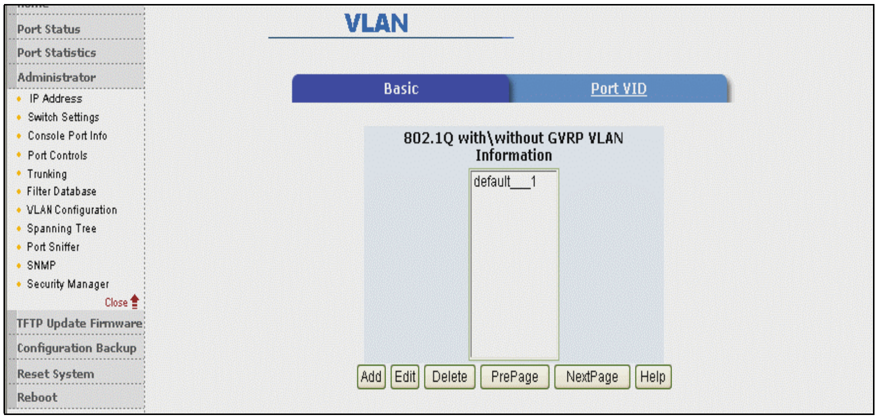
Port-based VLANs (IEEE 802.1Q VLAN)

This feature is an IEEE 802.1Q specification standard. Therefore, it is possible to create a VLAN across devices from different switch vendors. IEEE 802.1Q VLAN uses a technique to insert a “tag” into the Ethernet frames. The tag contains a VLAN Identifier (VID) that indicates the VLAN numbers.

Protocol-based VLANs

In order for an end station to send packets to different VLANs, it itself has to be capable of tagging packets it sends with VLAN tags, or it must be attached to a VLAN-aware bridge that is capable of classifying and tagging the packets with different VLAN IDs, based on not only on the default PVID but also other information about the packet, such as the protocol.

4.4.7.1 Basic



802.1Q with\without GVRP VLAN Information

default__1

Create a VLAN and add tagged member ports to it.

1. From the main menu, click **Administrator -- VLAN Configuration**.
2. Click **Add**.
3. Type a name for the new VLAN.
4. Type a VID (between 2-4094). The default is 1.
5. From the *Available Ports* box, select ports to add to the switch and click **Add**.
6. Click **Apply**.

4.4.7.2 Port VID

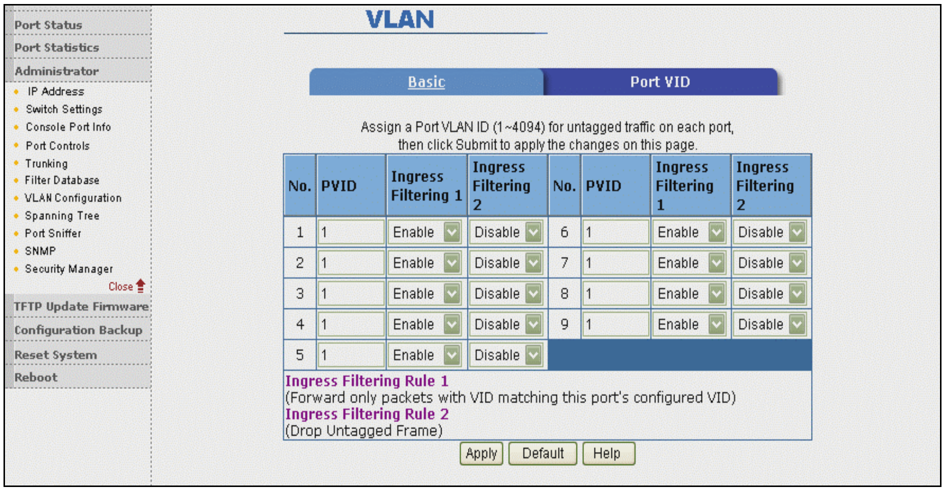
Configure port VID settings

From the main *Tag-based (IEEE 802.1Q) VLAN* page, click **Port VID Settings**.

Port VID (PVID)

From this page, you can set the Port VLAN ID that will be assigned to untagged traffic on a given port. For example, if port 9's Default PVID is 100, all untagged packets on port 9 will belong to VLAN 100. The default setting for all ports is VID 1.

This feature is useful for accommodating devices that you want to participate in the VLAN but that don't support tagging. Only one untagged VLAN is allowed per port.



Assign a Port VLAN ID (1~4094) for untagged traffic on each port, then click Submit to apply the changes on this page.

No.	PVID	Ingress Filtering 1	Ingress Filtering 2	No.	PVID	Ingress Filtering 1	Ingress Filtering 2
1	1	Enable	Disable	6	1	Enable	Disable
2	1	Enable	Disable	7	1	Enable	Disable
3	1	Enable	Disable	8	1	Enable	Disable
4	1	Enable	Disable	9	1	Enable	Disable
5	1	Enable	Disable				

Ingress Filtering Rule 1
(Forward only packets with VID matching this port's configured VID)
Ingress Filtering Rule 2
(Drop Untagged Frame)

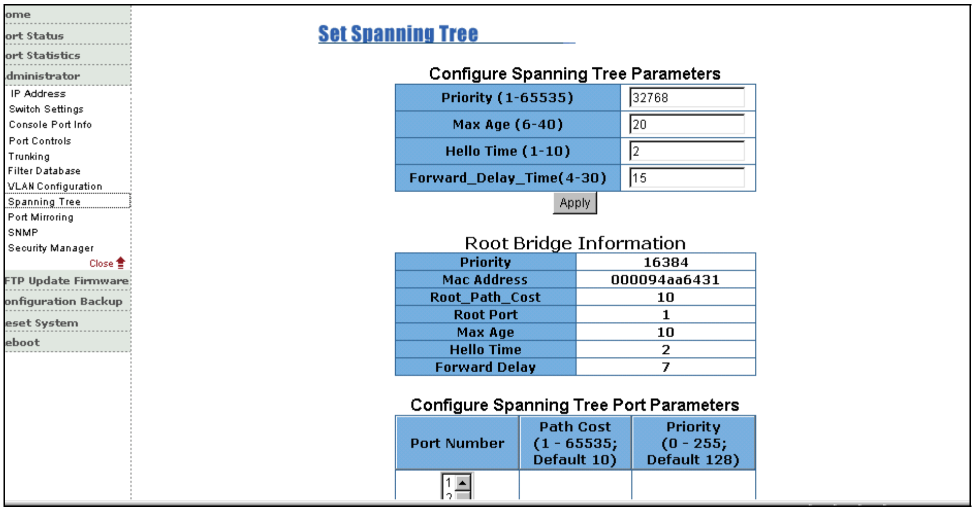
Ingress Filtering

Ingress filtering lets frames belonging to a specific VLAN to be forwarded if the port belongs to that VLAN. The switch has two ingress filtering rules, as follows:
Ingress Filtering Rule 1: Forward only packets with a VID matching this port's configured VID.
Ingress Filtering Rule 2: Drop untagged Frames.

4.4.8 Spanning Tree

The Spanning Tree Protocol (STP) is a standardized method (IEEE 802.1D) for avoiding loops in switched networks. When STP is enabled, it ensures that only one path at a time is active between any two nodes on the network.

You can enable Spanning Tree Protocol on the web interface *Switch Setting Advanced* item by selecting **Enable Spanning Tree protocol**. It is recommended that you enable STP on all switches to ensure a single active path on the network.



Set Spanning Tree

Configure Spanning Tree Parameters

Priority (1-65535)	32768
Max Age (6-40)	20
Hello Time (1-10)	2
Forward_Delay_Time(4-30)	15

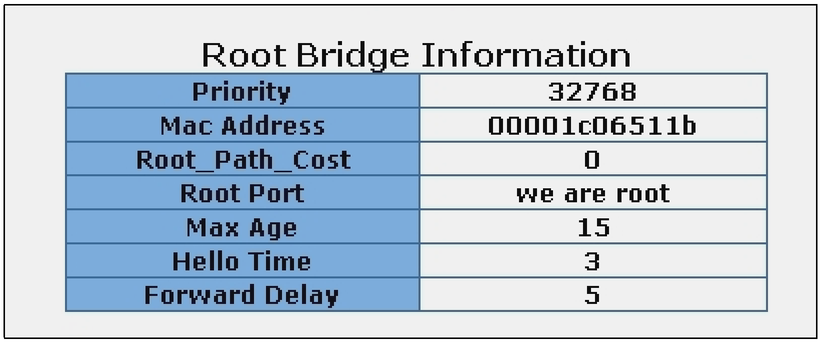
Root Bridge Information

Priority	16384
Mac Address	000094aa6431
Root_Path_Cost	10
Root Port	1
Max Age	10
Hello Time	2
Forward Delay	7

Configure Spanning Tree Port Parameters

Port Number	Path Cost (1 - 65535; Default 10)	Priority (0 - 255; Default 128)
1		

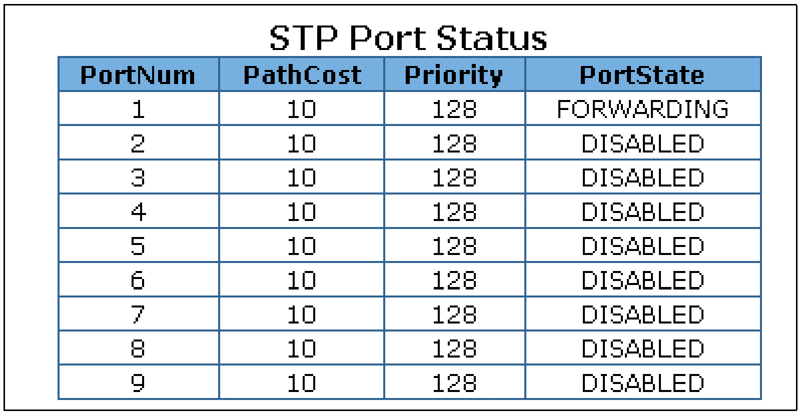
1. **You can view Spanning Tree information about the Root Bridge, as in the following screen:**



Root Bridge Information

Priority	32768
Mac Address	00001c06511b
Root_Path_Cost	0
Root Port	we are root
Max Age	15
Hello Time	3
Forward Delay	5

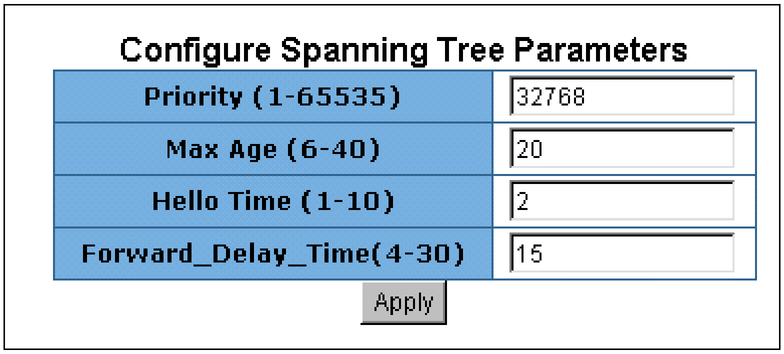
2. **You can view Spanning Tree port status, as in the following screen:**



STP Port Status

PortNum	PathCost	Priority	PortState
1	10	128	FORWARDING
2	10	128	DISABLED
3	10	128	DISABLED
4	10	128	DISABLED
5	10	128	DISABLED
6	10	128	DISABLED
7	10	128	DISABLED
8	10	128	DISABLED
9	10	128	DISABLED

3. **You can configure new values for the STP parameters, and then click the Apply button to modify.**



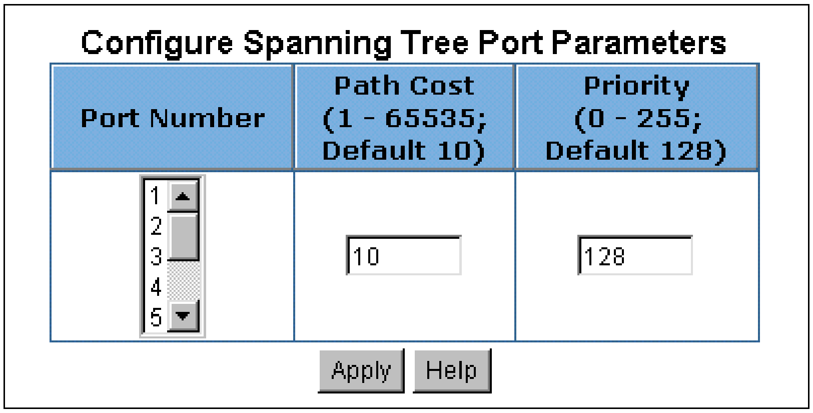
Configure Spanning Tree Parameters

Priority (1-65535)	32768
Max Age (6-40)	20
Hello Time (1-10)	2
Forward_Delay_Time(4-30)	15

Parameter	Description
Priority	You can change the priority value used to identify the root bridge. The bridge with the lowest value has the highest priority and is selected as the root. Enter a number 1 through 65535.
Max Age	You can change the Max Age value, the number of seconds a bridge waits without receiving Spanning Tree Protocol configuration messages before attempting a reconfiguration. Enter a number 6 through 40.
Hello Time	You can change the Hello time value, the number of seconds between the transmission of Spanning Tree Protocol configuration messages. Enter a number 1 through 10.
Forward Delay time	You can change the forward delay time, the number of seconds a port waits before changing from its Spanning Tree Protocol learning and listening states to the forwarding state. Enter a number 4 through 30.

Note: Only users familiar with the operation of Spanning Tree Protocol should change these values.

4. The following parameters can be configured on each port. Click the Apply button to have the changes take effect.



Configure Spanning Tree Port Parameters

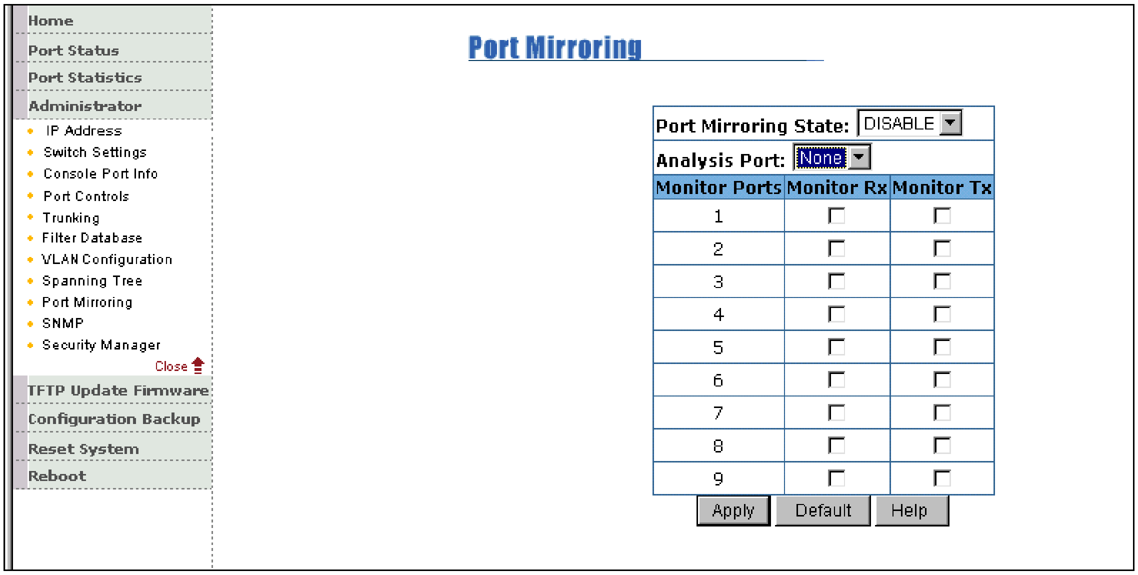
Port Number	Path Cost (1 - 65535; Default 10)	Priority (0 - 255; Default 128)
1 2 3 4 5	10	128

Parameter	Description
Port Priority	You can make a port more or less likely to become the root port, by adjusting the priority setting. The rage is 0-255, with the default setting is 128. The lower the number the higher priority the port is given, making it more likely to be the root port. If you change the value, you must reboot the switch.
Path Cost	Specifies the path cost of the port that the switch uses to determine which ports are the forwarding ports. The port with the lowest path cost becomes the forwarding port. The rage is 1-65535 and default value base on IEEE802.1D 10Mb/s = 50-600 100Mb/s = 10-60 If you change the value, you **MUST** reboot the switch.

Note: Only users familiar with the operation of Spanning Tree Protocol should change these values.

4.4.9 Port Mirroring

The Port Mirror is a method for monitoring traffic in switched networks. Traffic through the ports can be monitored by one specific port. That is, traffic that goes into or out of the monitored ports will be duplicated into the analysis port.



Port Mirroring

Port Mirroring State: DISABLE

Analysis Port: None

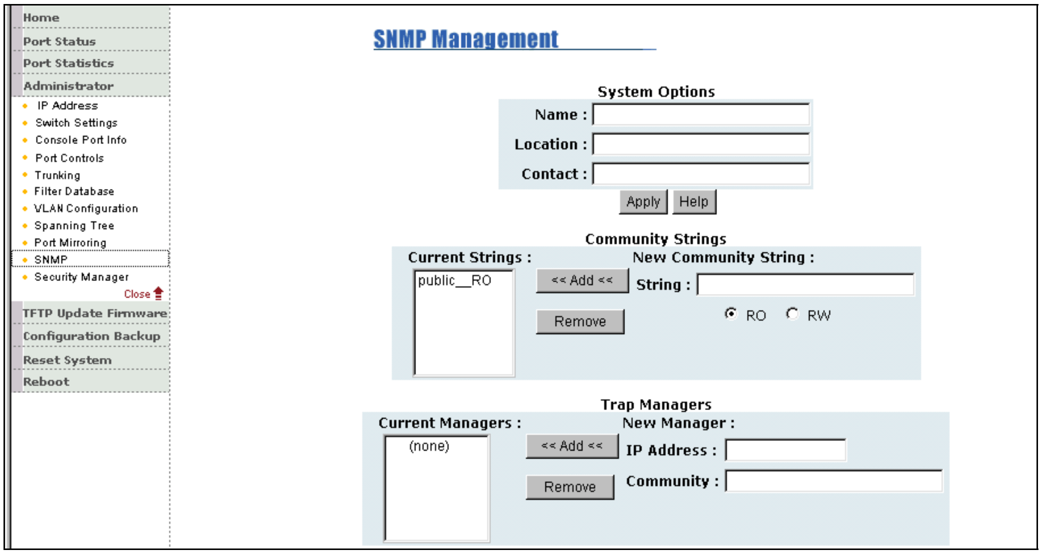
Monitor Ports	Monitor Rx	Monitor Tx
1	□	□
2	□	□
3	□	□
4	□	□
5	□	□
6	□	□
7	□	□
8	□	□
9	□	□

Port Mirroring State: Enable or disable the port mirror function.
Analysis Port: Select which port will copy all monitored ports' traffic.
Mirror Ports: The ports you want to monitor. All monitored ports' traffic will be copied to the analysis port. You can select a maximum of 9 monitor ports in the switch. To disable this function, set the monitor port to *none*.
Monitor Rx: Monitor received frames from the port.
Monitor Tx: Monitor sent frames from the port.

4.4.10 SNMP

Any workstation running the Simple Network Management Protocol (SNMP) can manage the switch, provided the Management Information Base (MIB) is installed correctly on the management station. The SNMP is a protocol that governs the transfer of information between management and the SNMP agent. The switch supports SNMP v1.

Use this page to define management stations as trap managers and to enter SNMP community strings. You can also define a name, location, and contact person for the switch. Fill in the system options data, and then click **Apply** to update the changes on this page.



SNMP Management

System Options

Name :

Location :

Contact :

Community Strings

Current Strings : public__RO

New Community String :

String :

● RO ○ RW

Trap Managers

Current Managers : (none)

New Manager :

IP Address :

Community :

4.4.10.1 System Options

- **Name**: Enter a name to be used for the switch
- **Location**: Enter the location of the switch
- **Contact**: Enter the name of a person or organization

4.4.10.2 Community Strings

Community strings serve as passwords and can be entered as one of the following:

- **Read only (RO)**: Enables requests accompanied by this string to display MIB-object information
- **Read-write (RW)**: Enables requests accompanied by this string to display MIB-object information and to set MIB objects

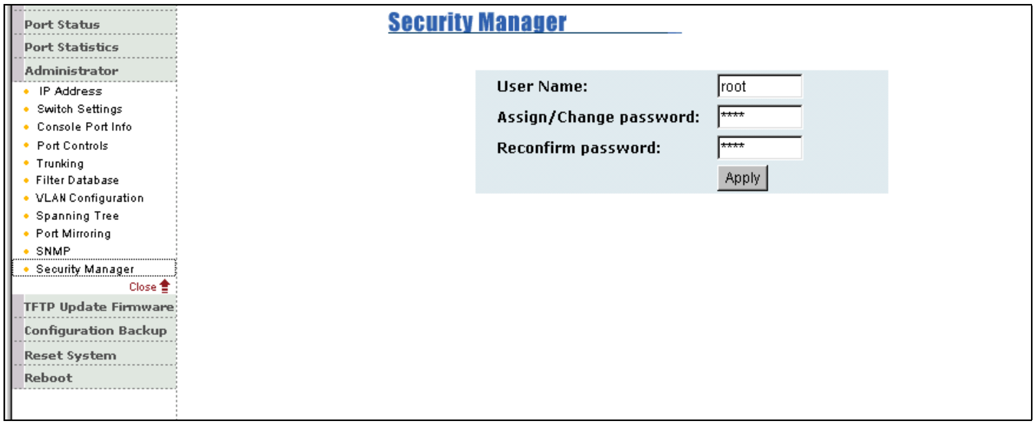
4.4.10.3 Trap Manager

A trap manager is a management station that receives traps, the system alerts generated by the switch. If no trap manager is defined, no traps are issued. Create a trap manager by entering the IP address of the station and a community string.

4.4.11 Security Manager

Use this page to change the web management user name and password.

Default User name: root
Default Password: root

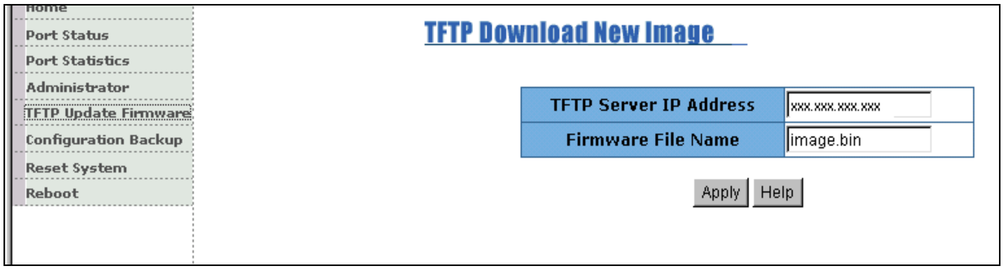


User Name: root
Assign/Change password: ****
Reconfirm password: ****

4.5 TFTP Update Firmware

TFTP is the Trivial File Transfer Protocol.

Use this page to set the TFTP server IP address (the new image code must have been saved to the TFTP server). Enter the file name and click **Apply**. The switch will download the new flash image from the server.



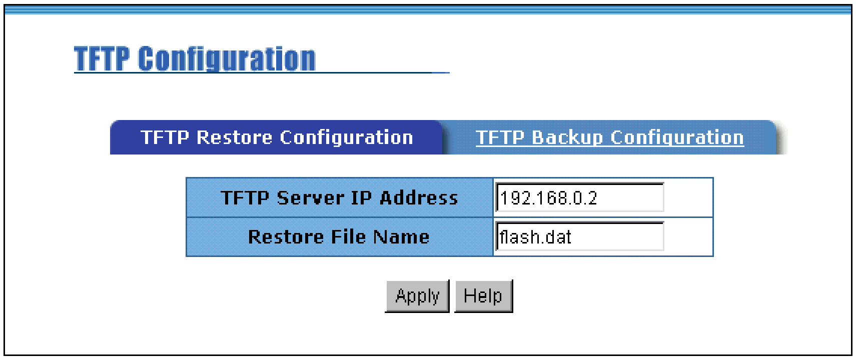
TFTP Download New Image

TFTP Server IP Address	xxx.xxx.xxx.xxx
Firmware File Name	image.bin

4.6 Configuration Backup

4.6.1 TFTP Restore Configuration

Use this page to set TFTP server address. You can restore the EEPROM value from here, but you must put the back image in TFTP server, the switch will download the back flash image.

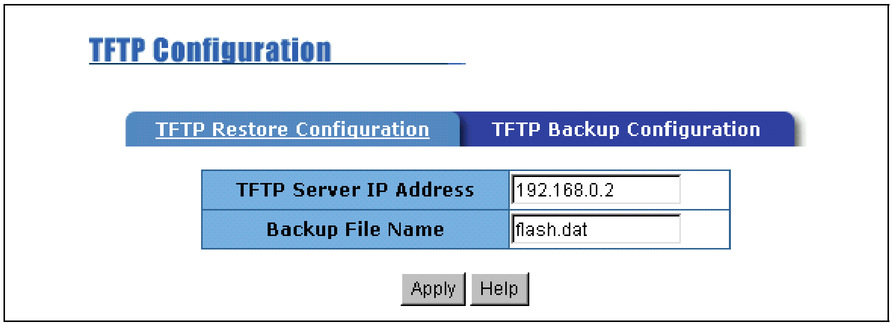


TFTP Configuration

TFTP Server IP Address	192.168.0.2
Restore File Name	flash.dat

4.6.2 TFTP Backup Configuration

Use this page to set the TFTP server IP address. You can save the current EEPROM value from here, then go to the TFTP restore configuration page to restore the EEPROM value.

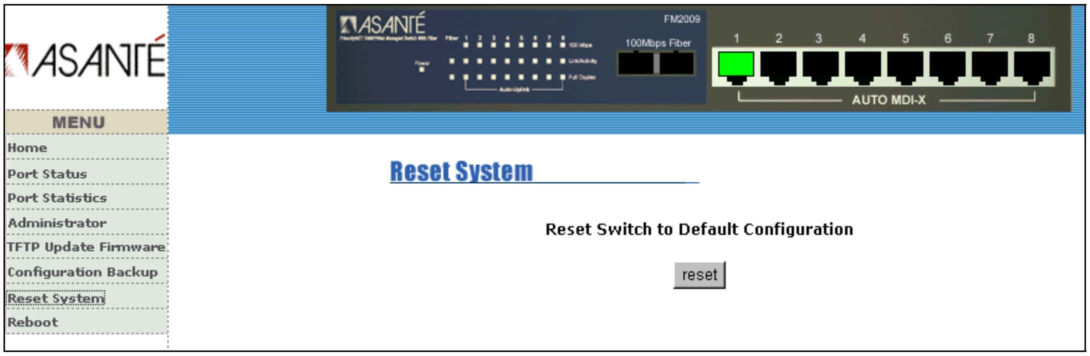


TFTP Configuration

TFTP Server IP Address	192.168.0.2
Backup File Name	flash.dat

4.7 Reset System

Reset the switch to the default configuration.

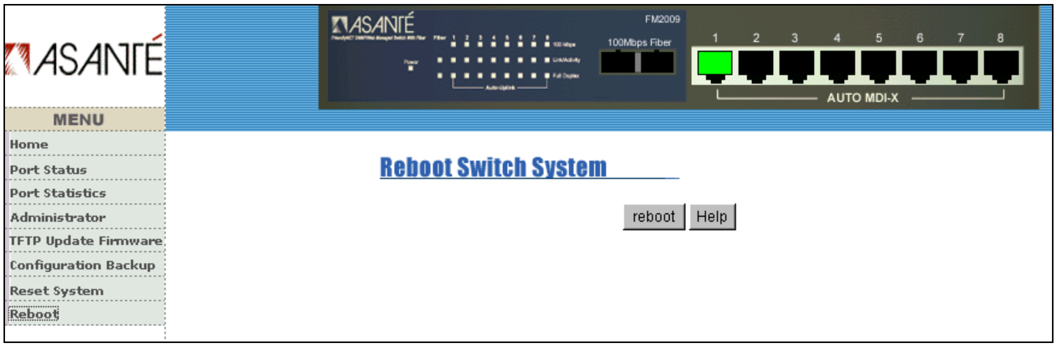


Reset System

Reset Switch to Default Configuration

4.8 Reboot

Reboot the switch in software reset.



Reboot Switch System

5. Technical Specifications

Standards Compliance	IEEE 802.3 10Base-T Ethernet, IEEE 802.3u 100Base-TX/FX Fast Ethernet
Protocol	CSMA/CD
Max Forwarding and Max Filtering Rate	14,880 pps per Ethernet port 148,800 pps per Fast Ethernet port
LED Indicators	Per Port: (10/100 UTP): 100Mbps, Link/Activity, Full Duplex (3 LEDs) Fiber Port (FM2009 only): 100Mbps, Link/Activity, Full Duplex (3 LEDs) Per Unit: Power
Copper Network Cables	10Base-T: 2-pair UTP/STP Cat. 3, 4, 5 cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5 cable EIA/TIA-568 100-ohm (100m)
Fiber Link Max. Distance (FM2009 only)	SC/MT-RJ/VF-45 Multi-mode: Half-duplex: 412m, Full-duplex: 2Km SC Single-mode: Half-duplex: 412m, Full-duplex: 15~60Km
Dimensions	254mm x 132mm x 37mm (10.0 x 5.2 x 1.5 in.)
Weight	1080 ±20 g (approximately 2.4 lbs ± 1 oz.)
Storage Temp.	-40ºC to 85ºC
Operational Temp.	0ºC to 45ºC (32ºF to 113ºF)
Operational Humidity	10% to 90% (Non-condensing)
Power	110-240VAC 50-60Hz
Power Consumption	17 Watts (Max)
EMI	FCC Class A, CE Mark
Safety	UL, cUL
Warranty	2 years limited warranty

6. Troubleshooting

This section is intended to help you solve the most common problems with installation of the FM2008/2009 switch.

Incorrect connections

- **Faulty or loose cables**

  Look for loose or obviously faulty connections. If they appear to be OK, make sure the connections are snug. If that does not correct the problem, try a different cable.

- **Non-standard cables**

  Non-standard and miswired cables may cause numerous network collisions and other network problems, and can seriously impair network performance. A Category 5 cable tester is a recommended tool for every 100Base-T network installation.

- **Improper Network Topologies**

  It is important to make sure that you have a valid network topology. Common topology faults include excessive cable length and too many repeaters (hubs) between end nodes. In addition, you should make sure that your network topology contains no data path loops. Between any two ends nodes, there should be only one active cabling path at any time. Data path loops will cause broadcast storms that will severely impact your network performance.

Diagnosing LED Indicators

The switch can be easily monitored through LED indicators, which assist in identifying common problems that you may encounter.

If the power LED indicator does not turn on when the power cord is plugged in, you may have a problem with the power outlet or with the power cord. However, if the switch powers off after having been running for a while, check for loose power connections, power losses, or surges at the power outlet. If you still cannot resolve the problem, contact your local dealer for assistance.

■ Cabling

RJ-45 ports: Use unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cable for RJ-45 connections: Category 3, 4 or 5 cable for 10Mbps connections or Category 5 or better cable for 100Mbps connections. Also be sure that the length of any twisted-pair connection does not exceed 100 meters (328 feet).

100Base-FX fiber port (FM2009 only): Fiber multi-mode connectors must use 50/125 or 62.5/125 um multi-mode fiber cable. You can connect two devices over a 2–kilometer distance. However, fiber single-mode connectors must use 9/125 um single-mode fiber cable. With single-mode, you can connect two devices over a 15–60-kilometer distance in full duplex operation.

FriendlyNET 2-Year Limited Warranty

Subject to the following limitations and exclusions, Asanté warrants to the original end user purchaser that the covered products will be free from defects in title, materials, and manufacturing workmanship for a period of two years from the date of purchase. This warranty excludes fans, power supplies, non-integrated software, and accessories. Asanté warrants that the fans and power supplies will be free from defects in title, materials, and manufacturing workmanship for two years from date of purchase. Asanté warrants that non-integrated software included with its products will be free from defects in title, materials, and workmanship for a period of 90 days from date of purchase, and the company will support such software for the purpose for which it was intended for a period of 90 days from the date of purchase. This warranty expressly excludes problems arising due to compatibility with other vendors' products, or future compatibility due to third party software or driver updates. To take advantage of this warranty, you must contact Asanté for a return materials authorization (RMA) number. The RMA number must be clearly written on the outside of the returned package. Product must be sent to Asanté postage paid. In the event of a defect, Asanté will repair or replace defective product or components with new, refurbished, or equivalent product or components as deemed appropriate by Asanté. The foregoing is your sole remedy, and Asanté's only obligation, with respect to any defect or non-conformity. Asanté makes no warranty with respect to accessories (including but not limited to cables, brackets, and fasteners) included with the covered product, nor to any discontinued product, i.e., product purchased more than thirty days after Asanté has removed such product from its price list or discontinued shipments of such product. This warranty is exclusive and is limited to the original end user purchaser only. This warranty shall not apply to secondhand products or to products that have been subjected to abuse, misuse, abnormal electrical or environmental conditions, or any condition other than what can be considered normal use.

> ASANTÉ MAKES NO OTHER WARRANTIES, EXPRESS, IMPLIED, OR OTHERWISE, REGARDING THE ASANTÉ PRODUCTS. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW ALL WARRANTIES OR CONDITIONS OF

MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. ASANTÉ'S LIABILITY ARISING FROM OR RELATING TO THE PURCHASE, USE OR INABILITY TO USE THE PRODUCTS IS LIMITED TO A REFUND OF THE PURCHASE PRICE PAID. IN NO EVENT WILL ASANTÉ BE LIABLE FOR INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES FOR THE BREACH OF ANY EXPRESS OR IMPLIED WARRANTY, INCLUDING ECONOMIC LOSS, DAMAGE TO PROPERTY AND, TO THE EXTENT PERMITTED BY LAW, DAMAGES FOR PERSONAL INJURY, HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY (INCLUDING NEGLIGENCE). THESE LIMITATIONS SHALL APPLY EVEN IF ASANTÉ HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES OR IF THIS WARRANTY IS FOUND TO FAIL OF ITS ESSENTIAL PURPOSE.

Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages or limitations on how long an implied warranty lasts, so the previous limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may have other rights, which vary from jurisdiction to jurisdiction.